Cotton Committee,
Indian Central &
Annual Report,
1922 to 1927

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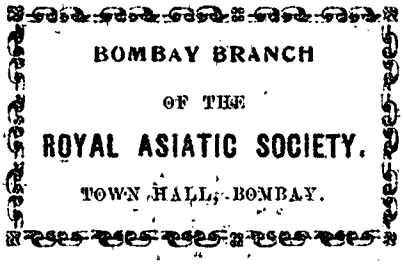

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ANNUAL REPORT

OF THE

SECRETARY, INDIAN CENTRAL COTTON COMMITTEE, BOMBAY,

FOR THE 133639

YEAR ENDING 31st AUGUST,

1922.-27

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BOMBAY BRANCH
OF THE
Royal Asiatic Society.

The Secretary
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ANNUAL REPORT OF THE SECRETARY, INDIAN CENTRAL COTTON COMMITTEE, BOMBAY, FOR THE YEAR ENDING AUGUST 31st, 1922.

The Central Cotton Committee, the creation of which was recommended by the Indian Cotton Committee of 1917-18, was constituted by Resolution* of the Government of India No. 404-22, Department of Revenue and Agriculture, dated 31st March 1921, as amended by Resolution No. 712-194 of 16th June 1921. A representative of the Gwalior State was added by Resolution No. 1272-194, dated the 13th October 1921.

Constituted broadly on the lines advised by Mr. MacKenna's Committee the present Central Cotton Committee is considerably more representative in character than originally proposed and includes representatives of all sections of the cotton trade and industry and of the Agricultural Departments of the principal cotton growing provinces.

Personnel.

A list of members, as at the first meeting of the Committee, is given below :—

1. Mr. S. Milligan, the Agricultural Adviser to the Government of India (President).
2. Mr. H. A. F. Lindsay, C.B.E., The Director General of Commercial Intelligence.
3. The Hon'ble Mr. Lalubhai Samaldas, C.I.E., Co-operative Representative.
4. Mr. C. A. H. Townsend, I.C.S., Director of Agriculture, Punjab.

* Appendix I.

5. Dr. D. Clouston, C.I.E., Director of Agriculture, Central Provinces.
6. Dr. H. H. Mann, Director of Agriculture, Bombay.
7. Mr. T. F. Main, Deputy Director of Agriculture, Sind.
8. Mr. A. McKerral, Deputy Director of Agriculture, Burma.
9. Dr. A. E. Parr, Deputy Director of Agriculture, United Provinces.
10. Mr. G. R. Hilson, Cotton Specialist, Madras.
11. Mr. V. A. Grantham, Deputy Chairman, Bombay Chamber of Commerce.
12. Mr. J. A. Kay, Chairman, Bombay Millowners' Association.
13. Mr. Mathuradas Vissanji, Indian Merchants' Chamber and Bureau, Bombay.
14. Mr. C. W. du Breul, Cotton Contracts Board and East Indian Cotton Association.
15. Seth Mangaldas Girdhardas, M.L.C., President, Ahmedabad Millowners' Association.
16. Mr. F. G. Travers, Karachi Chamber of Commerce.
17. Mr. S. B. Mehta, C.I.E., Central Provinces Commercial Representative.
18. Mr. N. A. Dravid, M.L.C., Central Provinces Commercial Representative.
19. Mr. H. P. M. Rae, Madras Commercial Representative.
20. Mr. Alexander Steel, Tuticorin Chamber of Commerce.
21. Mr. B. R. Briscoe, Upper India Chamber of Commerce.
22. Seth Prabhu Dyal, M.B.E., Punjab Commercial Representative.

23. Mr. B. M. Chatterji, Bengal Representative.
24. Mr. Mazhar Husain, Director of Agriculture, Hyderabad.
25. Mr. M. B. Nanavati, Director of Commerce and Industries, Baroda.
26. Mr. A. Howard, C.I.E., Imperial Economic Botanist, nominated by the Rajputana and Central Indian States.
27. Mr. B. C. Burt, M.B.E., Secretary.

Although members were appointed for a period of two years, several changes have since taken place due to leave vacancies.

On Mr. Lindsay's promotion as Secretary to the Government of India his place was taken by Mr. Freke who succeeded him as Director General of Commercial Intelligence.

Dr. Pendleton was appointed to represent the Gwalior State and Mr. H. Horsman succeeded Mr. Briscoe as representative of the Upper India Chamber of Commerce.

In April 1922 Messrs. Grantham, du Breul, Townsend and Dr, Parr proceeded to England, Messrs. Goodall, Ellis Jones, Jacob and Dr. Leake acting for them. Mr. A. Steel retired from India about the same time and the Tuticorin Chamber of Commerce nominated Mr. G. Z. Meli in his place. Mr. Purshottamdas Thakurdas took the place of Mr. Mathuradas Vissanji during the latter's absence from Bombay. At the first meeting, at the request of the Empire Cotton Growing Corporation, Mr. H. P. M. Rae of the Bombay Company acted as Lancashire representative; subsequently, with the approval of the Government of India, Mr. W. Roberts (of the British Cotton Growing Association) was invited to join the Committee pending the formal appointment of a representative of Lancashire.

Staff.

Mr. B. C. Burt, previously Deputy Director of Agriculture, United Provinces, was appointed by the Secretary of State to the post

of Secretary, and assumed charge on April 3rd, 1921. After a preliminary period of duty at the Headquarters of the Government of India an office was opened in Bombay in June 1921. The present office staff includes a Superintendent, Statistical Assistant, General Assistant, Stenographer, Typist and a Record Clerk.

Meetings.

Meetings of the full Committee were held on July 19th to 22nd, 1921, January 9th and 10th, 1922, and July 17th and 18th, 1922. At each meeting practically all members attended and in consequence much important work was possible.

Sub-Committees.

At its first and second meetings the Central Cotton Committee appointed the following Standing Sub-Committees :—

(1) *Research* :—The President, Messrs. Kay, Mathuradas Vissanji, S. B. Mehta, Howard, Hilson and Dr. Mann.

(2) *Finance*:—Mr. Grantham, the Hon'ble Mr. Lalubhai Samaldas, and Messrs. du Breul and Mathuradas Vissanji.

(3) *Standing Local Sub-Committee*:—All members resident in, or within easy reach of, Bombay.

(4) *Machinery Sub-Committee*:—Messrs. Kay, Mangaldas Girdhardas, Mehta and Horsman.

Provincial and Local Cotton Committees.

Provincial Cotton Committees have been established in Burmah, the Central Provinces, the United Provinces, Madras, the Punjab and Bengal. In Madras Local Sub-Committees have been formed at Nandyal, Bellary, Guntur, Tuticorin and Tiruppur (Coimbatore).

It is understood that in Bombay proposals for Divisional Committees have reached an advanced stage.

In Burmah the Provincial Committee has held four meetings, in the United Provinces and the Central Provinces two meetings each, in Madras, Bengal and the Punjab one meeting each.

The Central and Provincial Committees exchange proceedings and information and, as opportunity has permitted, the Secretary of the Central Committee has attended meetings of Provincial Committees.

Secretary's Tours.

On the recommendation of the Committee the Secretary proceeded to England in August 1921, for a total period of 12 weeks, to obtain the information required in connection with the Committee's proposals for Technological Research on cotton, to obtain details of suitable experimental spinning machinery, to ascertain what technological research work on cotton is at present in progress in England and to establish relations with the Empire Cotton Growing Corporation, the British Cotton Growing Association, the British Cotton Industry Research Association and the Research Department of the Fine Cotton Spinners' and Doublers' Association.

In December 1921 a short tour was made in the Punjab in connection with certain problems that had arisen in respect to Punjab American Cotton.

In February 1922 a visit to the Central Provinces to attend the Provincial Cotton Committee was followed by a short stay in the United Provinces to see work in progress and to attend a meeting of the Provincial Board of Agriculture and the Secretary then proceeded to Pusa and acted as Secretary to the Board of Agriculture in India.

In April a short tour in Madras included the first meeting of the Madras Cotton Committee, a visit to the Research Institute at Coimbatore (in connection with research proposals) and to Tiruppur in connection with cotton marketing problems. Gadag was visited *en route* in order to report on the working of the successful co-operative cotton sale societies organised by the Bombay Agricultural Department.

Visits were paid to Surat in January and March in connection with work in progress for the improvement of the Surat Cotton Crop and market organisation.

Functions of the Committee.

In the Government of India Resolution constituting the Committee these are broadly stated as following the recommendations of paragraph 261 of the Indian Cotton Committee's Report. The functions of the Committee will become more sharply defined as the precise form of legislation which the Committee has recommended is settled. Apart, however, from its more formal activities the Committee is a central body charged with the promotion of all measures which will aid the improvement of the great Indian cotton growing industry. Its representative character not only renders it well qualified to advise the Central and Provincial Governments in matters concerning the industry but affords a common meeting-ground for all sections of the trade with the Agricultural Departments which enables difficulties to be discussed and joint action taken for the common good.

The Work of the Year.

The report of the Indian Cotton Committee afforded a sound basis of information on which work could be started, and a large portion of the time of the Committee has been taken up with the examination of the various proposals of the MacKenna Committee and

their adaptation to the changed system of administration resulting from the Government of India Act of 1919.

Dealing first with the question of the improvement of marketing and the checking of adulteration, which are so essential to progress and on which the Indian Cotton Committee received such a mass of evidence, the Central Cotton Committee considered at their first meeting important references from the Government of India asking their opinion as to the necessity for legislation :

(*a*) to restrict the transport of cotton to prevent mixing, and

(*b*) for the regulation of gins and presses.

The Central Cotton Committee were also asked to advise as to the form which such legislation should take. In respect to the first of these the Central Committee agreed with the MacKenna Committee that restriction of cotton transport is necessary in order to prevent the wholesale importation of short staple cotton and *kapas* into long-staple cotton areas and the railing of baled cotton to stations with a good market reputation for subsequent re-booking and sale under a false description—practices which have been responsible for much loss to the grower and to the country. But in view of some of the difficulties which had been brought to the notice of the Committee by the Government of India and some of the objections which had been raised by Local Governments and commercial bodies during the Government of India's examination of the Indian Cotton Committee's proposals, the Central Cotton Committee felt unable to advise a rigid system of control for all India which would prohibit the transport of cotton, kapas, cotton seed or cotton waste by rail except to mills or ports or under license. In coming to this decision they were also guided by the experience which had been gained of licenses for rail transport during the war. They, therefore, recommended that restriction of transport should be limited to prescribed areas growing superior cottons and that legislation should be introduced nabling Local Governments (with the approval of their Legislative

Councils) to notify any area for protection and to forbid the importation of cotton into such areas, except under license and in accordance with rules framed by the Local Government. It was advised that the same Act should empower Local Governments to frame rules for the regulation or prohibition of the transport of cotton into protected areas by road, river or sea. It is considered that by thus concentrating attention on the really important areas of superior cotton and by granting wide powers to Local Governments in regard to the making of rules the minimum interference with trade consistent with the objects in view will be secured and local needs and difficulties will be fully considered. In advising Central legislation, rather than leaving Local Governments to legislate in their own Councils where they considered this course advisable, the Central Cotton Committee were largely influenced by the fact that Railways being a "Central" subject under the control of the Government of India Provincial legislation would present certain difficulties. All-India legislation presented certain further advantages in securing a degree of uniformity, otherwise difficult to ensure though most desirable to avoid confusion, and in making prompt action possible in the event of new areas requiring protection.

Accepting the Committee's recommendations the Government of India introduced a Cotton Transport Bill on these lines in the Legislative Assembly in March, 1922, which was read a second time and referred to a joint Select Committee of the Legislative Assembly and Council of State in September. The bill, with the amendments proposed by the Central Cotton Committee, will be found in the proceedings of the third meeting (Appendix III).

Regulation of Gins and Presses.

The evidence received by the Indian Cotton Committee showed that much abuse took place in gins and presses against which the

trade, as then organised, was unable to protect itself with the result that whole tracts gained an unsavoury reputation, Indian cotton generally suffered in quality and reputation and the cultivator, generally speaking, obtained a lower price than he should for good cotton. The essential features of the Indian Cotton Committee's recommendations were the compulsory marking of bales and the maintenance of records of ownership which would enable the trade itself to take action against fraudulent dealers; compulsory statistics of cotton presses were also recommended. With these recommendations the Central Cotton Committee were in agreement but they were unable to support the proposal for the compulsory licensing of gins and presses throughout India, nor were they in agreement with some of the conditions which it was sought to impose on licensees. Their detailed proposals will be found in the proceedings of the first and third meetings (Appendix III) and it is sufficient to say here that they have recommended legislation by the Government of India to enforce the marking of all bales in a satisfactory manner, the maintenance of press records of ownership which will enable cotton to be traced through the press number to the original owner, and the compulsory furnishing of fortnightly returns of cotton pressed which are essential for statistical purposes. It has further recommended that the same Act should empower Local Governments to frame rules for the better management of ginning and pressing factories particularly in respect to plans for new factories and requiring press houses to be properly paved. While these recommendations do not go as far as the original recommendations of the Indian Cotton Committee they provide for the essentials. The compulsory marking of bales will enable the trade to protect itself to a far greater extent than in the past—indeed this is a necessary complement to the restriction of transport—whilst Local Governments are in a far better position to frame rules to deal with local abuses than the Central Legislature. In regard to the marking of bales the Committee has advised that bales should be

marked on the flat side with the prescribed mark or number of the factory and a serial number. It has been ascertained that as soon as this is enforced by law the East India Cotton Association will require all bales tendered in fulfilment of a contract, (whether future, delivery or spot) to be correctly marked in order to constitute a fair tender.

The Improvement of Marketing.

Though legislative action is needed for the checking of adulteration and indeed is essential to any real reform of marketing, it is obvious that this alone is not sufficient and that constructive action is necessary also. It is generally recognised that Indian cotton can be marketed in a cleaner and purer condition than is the case at present and that many consumers are willing to pay for better cotton. At present, however, the grower receives little inducement to pick his cotton cleaner and in fact would often lose by doing so. As the trade is at present organised there is no direct incentive to the delivery of the best cotton available, on the other hand there is a tendency to deliver the worst cotton that will pass muster. This clearly indicates faulty organisation. The Central Committee has therefore taken up the question of the trade classification of Indian cotton with a view to remedying the present state of affairs. The precise steps which should be taken have yet to be determined and are under consideration by a special Sub-Committee. Present indications are that changes in the Bombay standards and a wider scale of allowances "on" for superior grade cotton would give an impetus in the right direction. It is true that this would chiefly affect cotton tendered against hedge contracts and that when sold 'spot' in Bombay in commercial quantities superior cotton always commands a premium, nevertheless there is considerable reason to believe that action by the East India Cotton Association would be reflected in up-country markets. This point, as also the question whether further steps can be taken to secure adequate premiums for staple and whether the sale of cotton

in up-country markets by grade with a mutual allowance clause should be developed, is being carefully examined by the Sub-Committee.

It is obvious that progress must be gradual. The Bombay market is still hampered by a number of narrow hedge contracts which make the market highly speculative so that the difference in price between different growths at times may be utterly at variance with intrinsic values and bear little relation to genuine trade demand. On the other hand the fact that no really satisfactory hedge is obtainable for Indian long staple cottons hampers trading in those cottons. Responsible commercial opinion in Bombay is in favour of the broadening of contracts but there is less agreement as to the speed at which changes can be introduced.

The ultimate object is clear, *viz.*, the replacement of the present system of station names by a sound trade classification enabling cotton to be bought and sold by grade and staple, *i.e.*, on its intrinsic value. To secure this, the checking of adulteration, the development of a healthy market and far more definite information than is available at present as to the staple length, spinning value and other characteristics of different Indian cottons are necessary. The Committee's proposals for technological research are referred to later and it is sufficient to say here that such research has an important bearing on market organisation.

Research.

The Central Cotton Committee's attitude with regard to Agricultural Research is clearly defined in the proceedings of the first meeting. It holds that much greater provision for such research is essential to the well-being of the cotton industry in India and that even if all the recommendations of the Indian Cotton Committee for additional staff under Local Governments were given immediate effect

there would still be a large uncovered field of work. There are many urgent problems of a fundamental nature and of more than provincial importance which require early investigation. The improvement of the quality of the Indian cotton crop is no longer mainly an export question but is vital to the continued development of the Indian mill industry which is already absorbing most of the longer stapled cotton grown in the country. Shorter mill hours, higher wages and a more critical attitude on the part of mill operators, the increasing proportion of yarn spun for Indian consumption (both in power and hand looms) and the steady tendency towards finer spinning all trend in the same direction, *viz.*, a demand for better cottons.

In round figures Indian cotton production may be taken at 43 lakhs of bales (average of 7 years) of which 7½ lakhs is conventionally assumed to be village consumption. Indian mill consumption is approximately 21 lakhs of bales so that Indian mills now take considerably more than half the average commercial crop. As half the yarn spun in India is of counts 20s and over it will be seen that the exportable surplus is almost entirely made up of short staple cottons, since the total production of all cottons classed as "staple" cottons averages only 19 lakhs of bales of which less than 14 lakhs at the most can be considered as fit for 20s counts. The export demand for very short stapled cottons, of which we have an average surplus of 12 lakhs of bales (which has been as high as 20 lakhs) still exists but its future can only be described as most uncertain. Japan and the Far East are rapidly increasing their spinning capacity but all increases appear to be for the finer counts. Japan's imports of American cotton have risen from 46,000 to 876,000 bales per annum since 1910 and in recent years Japan has taken anything from 300,000 to 500,000 bales of long-stapled Indian cotton. The increase in finer spinning has been much more marked in Japan than India. The Continent of Europe comes a bad second as a user of short staple Indian cottons.

It is impossible to predict the course of the re-organisation of the Continental spinning industry but there is grave doubt as to whether pre-war demand will be re-established. Coupled with the fact that there is every indication that the American cotton crop is likely to be two million bales per annum below pre-war standards, it is clear that India has an unrivalled opportunity for improving her position in regard to cotton production. Clearly the first step is the checking of adulteration which at present is responsible for the spoiling of anything up to 500,000 bales of long staple Indian cotton. Market reform is also necessary to bring to the grower the full premium for clean cotton and for cotton of superior staple and the Central Cotton Committee will spare no effort in this direction. But an improved yield per acre, and the production of suitable types of plant combining long staple with high yield and hardiness are essential to real progress and this can only be achieved by provision for agricultural research on a scale not yet attempted.

Accepting the principle that when special research is required for the benefit of an industry, that industry should pay for it, the Central Cotton Committee have submitted proposals for a Cotton Cess of four annas per bale on the whole of the commercial cotton crop the proceeds of which, estimated at eight to nine lakhs of rupees per annum, should be devoted to the improvement of the cotton growing industry forming a central research fund. The Committee's detailed proposals in this connection will be found in the proceedings of the first and second meetings (Appendix III).

It is considered that the Cess should be levied on all cotton exported by sea and on all Indian cotton used in mills in British India.

Whilst a strong body of opinion is in favour of the opening of special agricultural research institutes for the study of cotton problems, the Committee consider that in the first instance subsidies should be

given to existing (or projected) institutions, which are willing to undertake specific investigations of general importance and wide applicability.

As instances of the classes of problems which could be immediately undertaken the following have already been considered in detail and approved by the Standing Research Sub-Committee and by the Central Committee:—

(1) In co-operation with the Agricultural Department, Punjab, the isolation and testing of pure types of Punjab-American cotton and a general physiological study of the growing of American cottons under canal irrigation with special reference to the water requirements of the plant and the causes of loss of crop by bud, flower and boll shedding.

(2) In co-operation with the Bombay Department of Agriculture:—

(*a*) research on the physiology of the cotton plant in Gujerat with special reference to the "shedding" problem in black soils,

(*b*) an investigation into cotton within the Kumpta-Dharwar area and provision for further plant-breeding work on cottons of the Upland American tpye,

(*c*) a proposal for further research on the spotted boll-worm (Earias Spp.) is under consideration.

(3) In co-operation with the Madras Department of Agriculture:—

(*a*) research on *G. herbaceum* in the 'Westerns' cotton area and

(*b*) subject to further consideration of details, a study of the bio-chemistry of the cotton plant in order to elucidate variations in yield at present not understood and the underlying reasons for resistance and susceptibility to disease.

(4) In co-operation with the United Provinces Department of Agriculture further Mendelian research on cotton.

(5) In co-operation with the Central Provinces Department of Agriculture research on improved types of cotton for Central India.

(6) The Central Cotton Committee also desires to subsidise the proposed plant-breeding institute at Indore for work on cotton.

(7) A scheme has also been put forward for research studentships for agricultural research on cotton, the object being to attract distinguished graduates of Indian Universities to cotton research by offering them an opportunity of working under experienced cotton research officers for a period of two years or so. At present the paucity of qualified research workers is a difficulty constantly met with in India and only by some scheme of this kind will the necessary reserve be built up.

And finally it may be added that the Committee is impressed with the fact that the development of cotton cultivation in America and Egypt has largely been due to constant attention to the production and maintenance of improved varieties. In those countries the agricultural staffs devoted to cotton work are far larger in proportion than in India despite the fact that much has also been achieved in those countries by private enterprise. For many years to come there seems little probability of India offering sufficient inducement to private seedsmen to devote capital to the improvement of staple crops and the need for organised work for the improvement of the cotton plant is in consequence all the greater.

Technological Research.

The Indian Cotton Committee recommended that the Central Cotton Committee should include on its staff a cotton technologist

who would carry out laboratory tests on new cottons for Agricultural Departments, secure authoritative valuations and arrange for and interpret spinning trials and who would carry out general scientific work on Indian cotton fibres. The Board of Agriculture in India examined this proposal further and whilst cordially endorsing it advised that the technologist should be provided with an experimental spinning plant for carrying out spinning trials.

In their examination of this subject the Central Cotton Committee had the advantage of considering the results which have been obtained in recent years by the Research Department of the Fine Cotton Spinners' and Doublers' Association in Manchester. Working chiefly on Egyptian cotton Dr. Balls and his colleagues have shown the direction in which laboratory investigations and experimental spinning trials can be brought to bear on each other, have demonstrated the necessity for a special routine in carrying out experimental spinnings and have shown the practicability of spinning trials on quite small samples. It is not possible to carry out such trials in a commercial mill without entirely upsetting the mill routine at a cost disproportionate to the amount of information obtained. The Central Cotton Committee, therefore, endorsed the recommendation that the technologist should be equipped with a complete miniature spinning plant and it has been definitely ascertained that such a plant is practicable and that it can be suitably designed for experimental work.

The cost of the scheme was originally estimated at $3\frac{1}{2}$ lakhs initial and one lakh per annum recurring expenditure but it now seems probable that the initial cost can be kept within $2\frac{1}{2}$ lakhs.

The bearing of this work on that of agricultural research workers is clear and all agricultural departments have represented their need of assistance in judging the value of new cottons. The advantage to a plant breeder of facilities for such tests at an early stage of his work is obvious.

The more detailed study of Indian cottons as raw material for the spinner is an essential to the establishment of a sound system of marketing and this aspect of the question has received considerable attention in America during recent years. Adequate premiums for staple are essential to progress but we have not the knowledge of Indian cottons necessary to form a satisfactory trade classification to this end. The study of the measurable characters of Indian cottons and their relation to spinning value is consequently of the first importance.

Collection and Supply of Information.

By the establishment of an Information Bureau it is believed that the Central Cotton Committee can fulfil an important function in providing the trade with additional agricultural information in respect to cotton and in supplying trade information to Agricultural Departments particularly when required for the framing of a cotton development policy.

In regard to the supply of agricultural information to the trade attention has in the first place been directed to securing and circulating early particulars of auction sales, &c., of new or improved cottons, progress in the establishment of new varieties and other similar information which at present appears in due course in annual reports but which would be of use at an earlier date. It has also been possible to furnish Chambers of Commerce and Millowners' Associations with special information on a number of points. The prompt supply of such information has largely been possible by the ready response from the various agricultural departments to our requests. A note on recent progress in the introduction of improved varieties of cotton has been contributed to the Bombay Cotton Annual (published by the East India Cotton Association) and the substance of this with certain additions is reproduced here in Appendix II.

Arrangements have also been made with the Director General of Commercial Intelligence for the communication to the press of the weekly telegrams which he receives from most provinces on the conditions of the various commercial crops, as such information is of value to the trade to supplement the formal "forecasts."

An attempt has also been made to obtain more detailed information as to the demand, both from Indian mills and abroad, for different types of Indian cotton and also to gauge the trend of future demand. Statistics of export and mill consumption draw no distinction between different types of cotton and Bombay market prices for hedge contracts and official spot rates are little or no guide owing to the speculative character of the market and its wide fluctuations. Through the courtesy of a number of millowners and exporting firms a good deal of information has been collected and published in a recent bulletin.

It is hoped that before the 1923 cotton season opens the submission of returns of cotton pressed to specified dates will be compulsory throughout India. It is not generally known that the Madras Department of Agriculture issue such a weekly report at present as they have succeeded in obtaining complete returns on a voluntary basis.

Through the courtesy of the Cotton Contracts Board and East India Cotton Association arrangements have been made for official valuations of cottons for Agricultural Departments and several such valuations have been obtained. With the kind assistance of Messrs. Brady & Co., Messrs. Tata & Co., and the Empress Mills, Nagpur, spinning tests have also been arranged on cottons from Madras, Bombay, the United Provinces and Burmah.

Library.

On the abolition of the post of Imperial Cotton Specialist the library of his office was taken over by the Central Cotton Committee

and with this as a nucleus an attempt is being made to build up a good library of cotton literature. A number of journals and publications are now received by exchange, others have been purchased. In particular we are indebted to the British Cotton Industry Research Association for the supply of their unique weekly summary of current literature in which abstracts appear of all work published on the development of cotton growing and the improvement of manufacture and much other useful information not otherwise readily traceable.

B. C. BURT.

APPENDIX I.

No. 404-22.

GOVERNMENT OF INDIA.

DEPARTMENT OF REVENUE AND AGRICULTURE.

AGRICULTURE.

Delhi, the 31st March 1921.

Resolution.

In their Resolution No. 674-191, dated the 2nd August 1919, the Government of India indicated broadly the lines on which it was proposed to dispose of the recommendations in the Report of the Indian Cotton Committee. They are now able to announce their decision on the proposals made in Chapter XIX of the Report relating to the formation of a Central Cotton Committee.

2. Local Governments and Administrations were consulted and were asked to obtain the views of the various Trade Associations and Chambers of Commerce on the proposal. Replies have now been received from all Local Governments and Administrations, who generally support the proposal, and the Government of India have accordingly decided to constitute a Central Cotton Committee with headquarters at Bombay.

3. The functions of the Committee will be mainly advisory, and, subject to any modifications and additions which may subsequently be found necessary, will follow generally the lines indicated by the Indian Cotton Committee in paragraph 261 of its Report.

4. The Committee will, at the outset, be composed as follows, but additions to, and alterations in, its composition may be made from time to time on the recommendation of the Committee :

Official Representatives.

President—

1. The Agricultural Adviser to the Government of India.

Members—

A representative of the Agricultural Department in :—

2. Madras.
3. Bombay.
4. The Punjab.
5. The United Provinces.
6. Burmah.
7. The Central Provinces and Berar.
8. Sind.
9. The Director General of Commercial Intelligence.

Non-Official Representatives.

A representative of each of the following bodies :—

10. The East India Cotton Association, if established, or, in the alternative, the Bombay Cotton Trade Association.

11. The Bombay Millowners' Association.

12. The Bombay Chamber of Commerce.

13. The Ahmedabad Millowners' Association.

14. The Karachi Chamber of Commerce.

15. The Tuticorin Chamber of Commerce.

16. The Upper India Chamber of Commerce.

17 and 18. Two representatives of the Central Provinces and Berar to be nominated by the Local Administration from manufacturers or ginners.

19. A representative of the Madras Presidency to be nominated by the Local Government from manufacturers or ginners.

20. A representative of the Punjab to be nominated by the Local Government from manufacturers, ginners or large producers.

21. A representative of Bengal.

22. A representative of Lancashire.

Other Representatives.

23. A member of the Co-operative Department, official or non-official, to be nominated by the Government of India.

24. A representative of the Hyderabad State.

25. A representative of the Baroda State.

26. A joint representative of the States in Rajputana and Central India.

5. The members of the Committee will be appointed in the first instance for a period of two years and steps will now be taken to nominate the personnel in consultation with the Local Governments and Administrations and the Darbars concerned. Proposals have been approved by His Majesty's Secretary of State regarding the appointment of a Secretary to the Committee, and the officer selected for this appointment is Mr. B. C. Burt, at present a Deputy Director of Agriculture in the United Provinces. On his appointment the Secretary will be directed to submit proposals regarding his staff and the place and time of the first meeting of the Committee.

6. The cost of the Committee will be met from Imperial Revenues.

7. Subject to the submission to them for sanction of any proposals requiring it under the ordinary financial rules, the Government of India leave it to the discretion of Local Governments and Administrations to decide the composition and details of organization of their provincial and local committees.

Ordered that a copy of the Resolution be communicated to all Local Governments and Administrations, the Agricultural Adviser to the Government of India and the Finance, Commerce, Public Works and Foreign and Political Departments, for information, in continuation of Resolution No. 764-191, dated the 2nd August 1919.

Ordered also that the Resolution be published in the Supplement to the *Gazette of India* for general information.

J. HULLAH,

Secretary to the Government of India.

No. 712-194.

GOVERNMENT OF INDIA.

DEPARTMENT OF REVENUE AND AGRICULTURE.

AGRICULTURE.

Simla, 16th June 1921.

Resolution.

The Government of India have decided to add a representative of the Indian Merchants' Chamber and Bureau, Bombay, to the list of non-official members of the Central Cotton Committee published in paragraph 4 of their Resolution No. 404-22, dated the 31st March 1921.

Ordered that a copy of the Resolution be communicated to all Local Governments and Administrations, the Agricultural Adviser to the Government of India, the Secretary, Central Cotton Committee, and the Finance, Commerce, Public Works and Foreign and Political Departments, for information.

Ordered also that the Resolution be published in the Supplement to the *Gazette of India* for general information.

J. HULLAH,
Secretary.

No. 1272-194.

GOVERNMENT OF INDIA.

DEPARTMENT OF REVENUE AND AGRICULTURE.

AGRICULTURE.

Simla, the 13th October 1921.

Resolution.

The Government of India have decided to add a representative of the Gwalior State to the list of members of the Central Cotton Committee published in paragraph 4 of their Resolution No. 404-22, dated the 31st March 1921.

Ordered that a copy of the Resolution be communicated to all Local Governments and Administrations, the Agricultural Adviser to the Government of India, the Secretary, Central Cotton Committee, and the Finance, Commerce, Public Works and Foreign and Political Departments, for information, in continuation of Resolution No. 712-194, dated the 16th June 1921.

Ordered also that the Resolution be published in the Supplement to the *Gazette of India* for general information.

J. HULLAH,
Secretary.

APPENDIX II.

PROGRESS IN THE INTRODUCTION OF IMPROVED VARIETIES OF COTTON IN VARIOUS PROVINCES.

BOMBAY.

In Surat district the rehabilitation of the Surat variety and the pushing out of Goghari (short staple Broach) cotton has now achieved a marked degree of success. It is reported that as the result of the organised distribution of pure seed of a selected type of Surat cotton by the Agricultural Department the crop in the Chorasi, Jalalpore, Chikli, Bardoli and Valod taluqas is now almost free from Goghari. In Olpad taluqa it is estimated that the percentage of *Goghari* has been reduced to 5 to 8 per cent. In Broach district the Ankleshwar taluqa was almost entirely sown with pure Surat seed from the Government farms and it is hoped that short staple cotton will be pratically eliminated from the Hansot Mahal taluqa during the coming season.

So far as the area south of the river Nerbudda is concerned, it is stated that it only needs the maintenance of a pure supply of seed *and of a sufficient premium on good cotton* combined with the prevention of import of *Goghari* seed to keep up and improve the present standard. In this area the "Navsari quality" selection alone is now being distributed.

The area of special seed farm supervised by the Agricultural Department has been increased from 6,000 to 18,000 acres. Selected seed for 90,000 acres was distributed in 1921 and for 200,000 acres in 1922 and it is estimated that a further 200,000 acres is being sown with seed of the improved varieties from private sources. Local Co-operative Societies are being developed for further extension work. Special auction sales for the cotton grown on these seed farms form an integral part of the Agricultural Departments seed supply organisation. These auctions should be of value to mill buyers as providing a source of genuine Surat cotton of known purity. Continued trade support for these auctions is an essential to the complete success of the scheme.

In the Northern Gujerat (Dholleras area) work is still in the preliminary stage.

In the Kumpta Dharwar area (Southern Mahratta Country) improved types of Kumpta and Dharwar American cottons are established on a considerable scale and co-operative seed societies have been organised for extension work. The Agricultural Department supervises 10,000 acres of special seed farms for the supply of pure seed to the societies. The area sown with seed of known purity during the current season is estimated at—

Gadag No. 1 (Upland American) 35,500 acres,
Dharwar No. I (improved Kumpta) 38,000 acres,
Dharwar No. III (improved Kumpta) 5,000 acres.

The most important sale societies are those at Hubli and Gadag (for Kumpta and Dharwar American respectively) where auction sales of graded *kapas* are regularly organised.

In Khandesh considerable quantities of a pure strain of *Roseum* cotton has been distributed.

In all areas further progress in research directed to the production of still better strains has been made. As a result of selection work in Khandesh types have been obtained which are better in staple than the Roseum type and equally prolific. Some promising crosses have also been obtained. In the Southern Mahratta Country new selections from Kumpta cotton have been obtained this year which are a marked advance on any previous Kumpta cottons. In Surat certain newer types seem to offer even greater promise than those already established on a large scale.

Baroda State.

The important cotton growing areas of the Baroda State are much interlaced with those dealt with by the Bombay Department of Agriculture in the course of its operations in Surat. A definite scheme of joint action has therefore been arranged between the two Departments of Agriculture in order to produce and maintain uniform blocks of cotton true to one type. In the past the Bombay Department has furnished the Baroda State with the necessary selected seed, the Baroda Department undertaking propaganda work which resulted in 20,000 acres of a selected type in the Navsari district last season. The Baroda Department has now opened two seed depots of its own and controls 400 acres of special seed areas.

Hyderabad.

The Hyderabad State has continued and extended its important successful operations for the replacement of mixed cottons by the valuable Bani (Hyderabad Gaorani) type and for the maintenance of the latter in a state of purity. This crop was estimated at 420,000 bales last season and has averaged 324,000 bales during the last four years. In the two administrative districts, Nander and Parbhani, the crop is stated to be pure *Bani* and these districts produced last season 343,000 bales. The Agricultural Department controlled seed sufficient for the production of 180,000 bales.

The value of this supply of long stapled cotton, undoubtedly one of the very best in India, to Indian mills cannot be too strongly emphasised.

Central Provinces.

The problem of obtaining a cotton of superior staple capable of replacing Roseum has been seriously taken in hand. Seed has been distributed for 1,300 acres of 'Sindewahi cross' and for about 1,000 acres of Bani cotton (in Berar); Cambodia cotton is being grown on a small scale in the Nagpur and Chanda districts.

The Agricultural Department has issued seed for some 300,000 acres of pure Roseum cotton.

United Provinces.

The estimated area under selected Cawnpore American cotton for 1921–22 was 5,135 acres, an improvement on 1920–21 but less than in 1919–20. Considerable difficulty in obtaining the necessary irrigation facilities for this cotton has again been met with. As the result of a number of spinning trials it has been shown that this cotton is suitable for 25s warps and 30s wefts in Cawnpore and for 32s warps in Lancashire.

The selected Bundelkhand *desi* cotton (J. N. 1) (probably a strain of Gossypium neglectum, malvense) is gaining rapidly in popularity as it combines a high yield with a good ginning percentage (36 per cent.) and useful medium staple being suitable for 16s to 18s warps and 20s weft. A considerable extension of the area under this variety is expected.

Certain selections from the hybrid cotton K22 are reported to have given very good results in the neighbourhood of Muttra where seed for about 1,000 acres has been issued. This cotton is in considerable demand for local spinning being suitable for a slightly higher range of counts than J. N. 1. It is reported that demand for seed exceeds the supply and that there is a great future for this cotton.

The Punjab.

Punjab American cotton (Lyallpur American) has been established on a scale of some half million acres in the Canal Colonies. The 1921-22 crops gave an indifferent yield and much of it was of low quality and distinctly inferior to the 1920–21 crop. The question as to whether the type known as Lyallpur 4F is the most suitable in average years is receiving attention and promising results have been obtained with Lyallpur 285F which is being grown on an extended scale in suitable districts this year.

The reasons for the partial failure of the 1921–22 crop are not at present fully understood but it was noticeable that the early picking was extremely small and that the later pickings contained much immature seed. By special arrangements the Agricultural Department were able to ensure an adequate supply of sound seed for the present year and there has been no appreciable diminution in area.

Kapas auctions for Punjab American cotton of known purity were continued on the same lines as successful in previous years.

Burmah.

Promising results have been obtained with Cambodia cotton in Allanmyo and Monywa and some 1,000 acres are probably being sown in the present season. An improved strain of Wagale cotton has given good results for some years and ginning facilities have been provided at the Mahlaing farm to ensure the supply of seed and to assist cultivators to obtain full market prices. Further work on the improvement of the Wagale crop is in progress.

Madras.

Work on the introduction of improved varieties of cotton has followed largely along established lines, Cambodia, Karunganni and the

selected Northern cottons which the Agricultural Department has established are already well known to the trade. Further research work is in progress, chiefly under the direction of the Cotton Specialist, Madras.

Company cotton (Karunganni) is now grown on 200,000 acres in Madura, Ramnad and Tinnevelly and is also displacing dry land Cambodia and Uppam in Coimbatore 4,000 acres being grown in the latter district this year.

In the Northerns area sufficient seed for 8,500 acres of the selection 'Nandyal 14' (a white cotton of good length and strength and commanding a premium over ordinary Northerns of Rs. 50 per bale) was issued by the Agricultural Department.

In the Westerns area the selection known as Hagari 25 was issued for 12,800 acres.

Irrigated Cambodia was grown on 118,500 acres of which 87,300 acres was in Coimbatore district, 14,500 in Ramnad, 9,000 in Madura and the rest in Trichinopoly, Tinnevelly and Salem. Of this 22,900 acres (20,000 in Coimbatore) is under improved strains issued by the Agricultural Department.

Seed supply organisation is being further developed but improvement in marketing and the checking of adulteration of valuable staple cottons with inferior cottons imported from adjoining tracts appear to be the most urgent problems at the moment.

The Madras Pest Act has been very successful in materially reducing the damage to the Cambodia crop by pink boll worm.

[Bombay Cotton Annual, 1922.]

APPENDIX III.

Indian Central Cotton Committee.

ABSTRACT OF PROCEEDINGS.

July 21st, 1921.

SUBJECT I.

Proposals of the Indian Cotton Committee for the control of Gins and Presses.

The report of Sub-Committee " A " was read and discussed.*

Resolved :—

I. With reference to paragraph 225 of the Indian Cotton Committee's Report the Central Cotton Committee agree that :—

(*1*) *The proper marking of bales at presses is essential.*

(*2*) *The maintenance of press records which would enable the ownership of every bale to be established should be compulsory.*

(*3*) *Statistical returns should be compulsory.*

II. The Central Committee then considered the Sub-Committee's Report on paragraph 225 (*a*) to (*m*) of the report of the Indian Cotton Committee.

Resolved that :—

The Central Cotton Committee are not in favour of prescribing standard plans for new ginning factories but that steps should be taken, if necessary by legislation, to ensure that in all new ginning factories separate exits and entrances should be provided and certain other minor requirements provided for but that otherwise the lay-out of the factory should be left to the owner. They consider that plans should be submitted for approval to Provincial Cotton Committees and/or Provincial Agricultural Departments.

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*Not printed.

III. The Central Cotton Committee were opposed to the proposal in paragraph 225 (*b*) of the Indian Cotton Committee's Report and considered that the proposal in paragraph 225 (*c*) could not be insisted on in practice.

IV. *Indian Cotton Committee's Report, paragraph 225 (d).*—The Central Cotton Committee recommend that this should be amended to read as follows:—

"In press houses where cotton is handled on the ground floor this floor should be paved."

Indian Cotton Committee's Report, paragraph 225 (e).—The Central Cotton Committee consider that this would be difficult to enforce.

Paragraph 225 (f).—"The owners both of ginning and pressing factories should undertake to submit regularly and punctually such returns as may be prescribed by Government from time to time and to certify the correctness of the returns so submitted." Dealt with in 1 (*3*) above.

Paragraph 225 (g).—Resolved that the Indian Central Cotton Committee observe that the new Factories Bill does not contain any clause corresponding to clause 27 in Act XII of 1911 exempting cotton ginning factories from certain provisions of the Factories Act. If the Bill be passed as drafted all ginning factories employing over 20 persons will automatically come under the Act and Local Governments will have power to bring factories employing over 10 persons under the Act. In the opinion of the Central Cotton Committee this is sufficient but it desires to have an opportunity of reconsidering the question should the Factory Bill be materially altered.

Paragraph 225 (h).—"Only the certified standard weights prescribed for the tract should be used and also correct scales so as to ensure that both cultivators and dealers are given correct weight."

The Central Cotton Committee endorse this recommendation.

Paragraph 225 (i).—The Central Cotton Committee consider that this recommendation should be amended to read:—

"The owner of a ginning factory should undertake to keep a daily record of all the cotton or *kapas* ginned in his factory

showing in detail the name of the person for whom it was ginned. In the case of a pressing factory the daily record should show the quantity of cotton pressed, the name of the person for whom it was pressed, and the number of bales pressed daily, and where necessary for statistical purposes, the weight of each bale. The owner of a pressing factory should mark each bale with the number assigned to the factory and with a running serial number for the season to ensure that the identity of the original owner of the bale may be known."

System of marking bales.—The Central Cotton Committee consider that bales should be clearly marked on the flat side of the bale with the number of the factory and the running serial number.

**Paragraph 225 (j).*—This was not considered necessary by the Central Cotton Committee but is unobjectionable provided that the words "members of the Central Cotton Committee or of Provincial or Local Committees" are omitted.

Paragraph 225 (k).—The Central Cotton Committee consider this recommendation unnecessary as measures to control seed to deal with insect pests should be taken under a Pests Act.

Paragraph 225 (l).—The Central Cotton Committee consider that this should be provided for in the Factories Act.

Paragraph 225 (m).—The Central Cotton Committee consider the proposal to be unworkable.

Machinery for carrying out the above recommendations.

It was considered that it was essential that rules for the marking of bales, maintenance of records and submission of statistical returns should be uniformly enforced throughout India. The Sub-Committee's recommendation was therefore amended to read as follows:—

"The Central Cotton Committee consider that an all-India Act should be passed by the Central Legislature empowering Local Governments to frame rules with a view to giving effect to all or any of the above recommendations. The principal Act

* "Access to ginning and pressing factories must at all times be given to any members of the Central Cotton Committee or of the Provincial or Local Committees, to the Collector or Deputy Commissioner of the District, to gazetted officers of the Agricultural Department and to officers of the Factory Department for all purposes including the verification of records and returns."

should enforce the marking of bales and the maintenance of proper press records and the furnishing of statistical returns."

The Report of the Sub-Committee as amended was unanimously accepted.

SUBJECT II.

The Report of Sub-Committee "A" of July 20th was read and discussed and amended.

Resolved :—

I. That the Indian Central Cotton Committee recommend that an all-India Enabling Act be passed empowering Local Governments to notify areas into which the import of cotton and/or waste and/or cotton seed and/or kapas shall be prohibited except under such rules as may be framed by the Local Government. The term cotton is to be taken to include fully-pressed bales, half-pressed bales and loose cotton.

II. That when rules are being framed by Provincial Governments under this Act the Indian Central Cotton Committee should be consulted.

III. Definition of Cotton Waste.—The term "Cotton Waste" means droppings, strippings, fly and any soft waste product of a mill as distinct from hard waste which means yarn waste.

REPORT OF SUB-COMMITTEE "A".

Subject II.

The sections of the Indian Cotton Committee's Report dealing with restrictions on transport to prevent adulteration were read and discussed. After considerable discussion, it was pointed out that there were three alternative methods of proceeding with legislation :—

I. By an all-India Act on the lines recommended by the Indian Cotton Committee.

II. By an all-India Enabling Act empowering Local Governments to take action.

III. By allowing Local Governments to take action on the lines of the draft Bombay Bill requiring in each case the previous sanction of the Government of India, Railways being a Central subject.

Alternative III was considered less practicable and method II was adopted unanimously by the Sub-Committee, although a number of members of the Sub-committee preferred method I.

The Sub-Committee, therefore, recommended that an all-India Enabling Act be passed, empowering Local Governments to notify areas into which the import of cotton and/or kapas and/or waste and/or cotton seed shall be prohibited except under such rules as may be framed by the Local Government. The term "Cotton" is to be taken to include fully-pressed bales, half-pressed bales and loose cotton.

Cotton Waste.—It was pointed out that the accepted Trade term is Soft Waste or Fly. Mr. Rae pointed out that cotton waste should include all forms of waste cotton, except waste yarn. The following definition suggested by Mr. Grantham was accepted by the Sub-Committee :—

"Cotton waste (that is droppings, fly, strippings, &c.) includes all the soft waste products of a mill as distinct from hard waste."

Rules.—The Sub-Committee suggest that when rules are being framed by Provincial Governments under this Act, the Indian Central Cotton Committee should be consulted.

Subject III.

Technological Research.

The Report of Sub-Committee "B" was read and accepted.

The Central Cotton Committee unanimously agreed that the early appointment of a Technologist was necessary and that he should be provided with an experimental spinning plant.

The Central Committee endorsed the view of the Sub-Committee "B" with regard to the Secretary's deputation to England and sanctioned the proposal.

REPORT OF SUB-COMMITTEE "B".

Subject III.

Technological Research.

The Sub-Committee considered the appointment of a Technologist. After discussion it was agreed that it was necessary to provide him with his own experimental spinning plant. It was thought that a scientific Technologis

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with practical knowledge of spinning could be obtained and that a master spinner to work under him could be obtained in India. The Sub-Committee considered that the Secretary should enquire into the matter in England, due attention being given to the necessity for research in the relation of lint characters to spinning quality.

The Sub-Committee decided that it was necessary for the Secretary to proceed to England on deputation to enquire into the prospects of obtaining a Technologist and obtaining information as to the machinery required and the cost. He should report on the technological research now in progress in England.

They consider that a period of six weeks in England is possibly too short and if necessary this should be extended by the India Office.

The spinning plant and the laboratory should be located in Bombay. It should be suitable for a range of counts of 10s to 70s.

The estimate of cost of plant, building, &c., was considered and for a preliminary estimate £20,000 was accepted. Recurring expenditure on technological research was estimated at rupees one lakh per annum.

Subject IV.

The Secretary's proposal as regards the collection and supply of information to Agricultural Departments were approved. The Secretary was directed to report progress at the next meeting.

As regards changes in the export trade it was considered that the Secretary would be able to obtain general information of value from exporting houses but that there might be considerable difficulty in getting detailed statistics.

Subject V.

Report of Sub-Committee "B" was read and considered. The Central Committee accepted the portion of the report dealing with staff and Provincial Committees.

REPORT OF SUB-COMMITTEE "B".

Subject V.

Consideration of a statement supplied by the Government of India as to the progress made by various Local Governments, particularly with regard to the appointment of additional staff.

Staff.

The Sub-Committee noted that the recommendations of the Indian Cotton Committee with regard to staff had been carried out almost in their entirety as regards sanction for the appointments. Considerable difficulty has, however, been experienced in filling up some of the posts. With regard to the other recommendations of the Committee, the position is in general fairly satisfactory but the Sub-Committee would strongly recommend the formation at an early date of Provincial Cotton Committees as many of the recommendations can only be carried out through these bodies. It appears to be specially necessary that the question of the establishment of cotton markets should be taken up at an early date and the Sub-Committee recommend that this matter be considered in the first place by the Provincial Cotton Committees and their decisions communicated to the Central Cotton Committee who would discuss the question at their next meeting.

Agricultural Research.

The Sub-Committee considered that it was necessary to make further provision for research of a general nature with regard to questions affecting cotton and realized that this is only possible by a considerable increase in funds available for the purpose. Considerable difference of opinion, however, existed as to the manner in which funds placed at the disposal of the Cotton Committee should be utilised; one section of the Sub-Committee recommending that the funds should be used in whatever directions the Committee considered desirable, while another section was strongly of opinion that the utilization should be confined to the subsidising of the existing institutions. It was decided to lay the whole question before the full Committee for discussion and decision.

Agricultural Research.

After full discussion the following Resolution was moved by Dr. Mann and seconded by Mr. Kay:—

(*1*) *That a largely increased amount of research into the fundamental problems of cotton growth and production is required and the future of the cotton industry in India largely depends upon it.*

(*2*) *That the cost of these researches would be great and the funds available at present for them (involving as they do the staff necessary to carry them out) are not sufficient.*

(*3*) *That if a Cotton Cess be imposed, the first charge on the money raised by the cess should be the Technological Department in Bombay.*

(4) That beyond this the Central Cotton Committee should indicate and determine the fundamental agricultural problems which need investigation, the results of which can be of general advantage. This being done, proposals for carrying out this work should be called for from all existing or projected Agricultural Departments or institutes and, if found suitable, subsidies should be made for a limited period and reports called for each year. If no existing institution is able or willing to carry out a piece of the essential work the question of establishing an institute for the purpose should be considered.

(5) That a research Sub-Committee of the Central Cotton Committee should be formed for the above purpose who would determine whether existing institutions could carry out the required research work. Cess funds should be controlled by the Central Committee.

After further discussion Mr. Grantham moved that:—

(6) The Research Sub-Committee should be directed to consider at once the Indore Research Institute Scheme with a view to the provision of funds.

The addition having been accepted by the mover and seconder the Resolution, as finally amended, was carried unanimously.

It was unanimously decided that the Research Sub-Committee should consist of three Commercial Members and three Agricultural Members with the Agricultural Adviser as President and with power to co-opt additional members.

The following members were appointed:—

The Agricultural Adviser, Messrs. Kay, Mathuradas Vissanji, Mehta, Howard, Hilson and Dr. Mann.

Subject VI.

Functions.

With reference to paragraph 261 of the Indian Cotton Committee's Report, the Central Cotton Committee accept these recommendations with the following reservations:—

(*e*) *Trade Classification of Cottons.*—This cannot be discussed until the formation of the East India Cotton Association is completed.

(*i*) *Improvement of Forecasts.*—Consideration postponed until the Government of India communicate with the Central Cotton Committee on the subject of the general improvements of cotton forecasts which, it is understood, they have under consideration.

(*k*) The question of the publication of an annual review of the cotton position should come up for consideration at the next meeting of the Central Committee as it is understood that the Cotton Contracts Board are preparing an annual publication for the cotton year ending in September. As regards (*f*), (*i*), (*j*), the Central Committee have framed definite recommendations in their consideration of subjects, I, II, III and IV.

As regards (*g*) the Committee resolved:—

(*1*) *That their proceedings should be forwarded to Provincial Cotton Committees.*

(*2*) *That Provincial Cotton Committees should be asked to supply the Central Cotton Committee with copies of their proceedings.*

(*3*) *That it was desirable to suggest to Provincial Cotton Committees that the Secretary of the Indian Central Cotton Committee should be invited to attend their meetings when matters of general interest were up for discussion or when the Indian Central Cotton Committee had referred matters of importance to the Provincial Committee.*

SUBJECT VII.

Cotton Cess.

Resolution I.—Proposed by Mr. Dravid,

Seconded by Mr. Kay.

That the Government of India be requested to reconsider the question of imposing a Cotton Cess to provide funds for the activities of the Central Cotton Committee and in particular to meet the cost of the Committee's proposals in respect of Technological and Agricultural Research.

Carried unanimously.

Resolution II.—Proposed by Mr. Grantham,

Seconded by the Hon'ble Mr. Lalubhai Samaldas.

That the Cotton Cess should be levied on all the commercial cotton crop and not only on exports.

Carried unanimously.

Resolution III.—Proposed by the Hon'ble Mr. Lalubhai Samaldas,

Seconded by Mr. Grantham.

That a Cotton Cess should be levied of 4 annas per 400 lb. bale for a period of 5 years but that the Government of India should have power to reduce the cess by executive order within the period at the request of the Indian Central Cotton Committee.

Proposed by Mr. Mehta,

Seconded by the Hon'ble Mr. Lalubhai Samaldas.

That the Cotton Cess should be collected from millowners and exporters.

Proposed by Seth Mangaldas,

Seconded by Mr. Grantham.

That the Cotton Cess should be collected at the baling presses.

Resolution IV.—No question of principle being involved the Committee finally resolved:—

That the question of machinery for the collection of the cess was a matter for the Government of India to decide and that the record of the opinions expressed should be forwarded to the Government of India for consideration.

Resolution V.—It was resolved that—

Cotton imported from outside India should be exempt from the cess.

Resolution VI.—Proposed by Mr. Kay,

Seconded by Seth Mangaldas Girdhardas.

The Central Cotton Committee consider that all funds raised by the proposed Cotton Cess should be strictly ear-marked for cotton development, and that annual balances if any should not lapse to General Revenues. It is essential that the Central Cotton Committee should have control of the utilization of the funds.

Carried unanimously.

Resolution VII.—Proposed by Mr. Grantham,
Seconded by the Hon'ble Mr. Lalubhai Samaldas.

That a Standing Finance Sub-Committee of the Indian Central Cotton Committee should be appointed to deal with the expenditure of Cotton Cess funds.

Carried unanimously.

It was agreed that the Finance Sub-Committee should consist of four members all resident in Bombay.

The following members were appointed:—

Mr. Grantham (Bombay Millowners' Association).

The Hon'ble Mr. Lalubhai Samaldas (Co-operative Representative).

Mr. du Breul (Cotton Contracts Board).

Mr. Mathuradas Vissanji (Indian Merchants' Chamber and Bureau).

SUBJECT VIII.

The consideration of the budget was delegated to the Standing Finance Sub-Committee.

General.

The Secretary was directed to suitably acknowledge the telegram received from the Empire Cotton Growing Committee (through the Government of India) and their letter and to welcome their kind offer of co-operation.

SECOND MEETING—JANUARY 9TH AND 10TH, 1922.

AGENDA.

January 9th.

A special Sub-Committee consisting of the Standing Research Sub-Committee with the addition of the spinner members nominated by the Agricultural Adviser to the Government of India, met at 11 a.m.

(*1*) To consder the Secretary's Report on his deputation to England.

(2) To discuss the plans and detailed estimates submitted for the proposed Experimental Spinning Station.

(3) To consider a proposal put forward by Mr. Kay for an extension of the Technological Department to include a Testing House on the lines of the Liverpool Chamber of Commerce Testing House which would undertake (on payment) work for the trade.

(4) To report to the Indian Central Cotton Committee on the detailed proposals for Technological Research.

SUBJECT I—*Technological Research.*

Resolved that—

Proposals (1) to (6) of the Report of the Sub-Committee appointed to consider Secretary's Deputation Report be approved.

(7) *Resolved that:—*

The Technologist should not be allowed to undertake outside work unless authorised by the Central Cotton Committee; all fees for such work should go to the Central Cotton Committee's funds and a clause to this effect should be included in the Technologist's Agreement.

(b) Proposal (7) of the Sub-Committee's Report was amended and passed.

(8) The Machinery Sub-Committee's proposals for the experimental spinning plant were amended and passed. The Sub-Committee's proposal that a specification should be issued and fresh estimates called for was approved.

(9) *Resolved that:—*

The consideration of tenders and placing of orders for machinery be delegated to a Special Joint Sub-Committee consisting of the Finance Sub-Committee and Machinery Sub-Committee.

(10) *Land for Research Laboratory and Spinning Plant:—*

Resolved that:—

The necessary land be leased with, if possible, an option of subsequent purchase and that negotiations for land be delegated to the Standing Local Committee subject to the approval of the Finance Sub-Committee.

Proceedings and Report of Special Sub-Committee appointed to consider the Secretary's Deputation Report in respect to the Experimental Spinning Plant.

[JANUARY 9th, 1922.]

As amended and accepted by the Central Cotton Committee.

[JANUARY 10th, 1922.]

The Sub-Committee recommend that the Technologist appointed should be an officer with high scientific qualifications in physics and with a knowledge of textiles. From the Secretary's Report it is clear that there is every probability of obtaining the class of officer required as Technologist. A practical spinner would be required to assist him and the Sub-Committee consider that there will be no difficulty in obtaining a suitable man in India for the latter appointment.

(2) The Committee consider that two Research Assistants will be required but the question should come before the Central Committee again after the Technologist is appointed.

(3) The selection of the Technologist should be made by the Central Cotton Committee and the services of any members of the Committee proceeding to England should be utilised to interview candidates.

(4) The appointment of a mechanic (for the manufacture of apparatus, &c.) was provisionally approved—the appointment to await the arrival of the Technologist.

(5) The Sub-Committee agree as to the necessity for humidifying plant in connection with the experimental spinning plant and that it should be of a type permitting the most accurate regulation possible of the humidity in the spinning shed. As humidifying plant can probably be obtained at comparatively short notice, selection of the plant might await the appointment of the Technologist.

(6) The estimate for testing instruments was accepted for budget purposes, but the selection of the instruments should be made by the Technologist after appointment.

(7) Mr. Kay placed before the Committee a proposal for an extension of the laboratory to include the testing of cloth as well as of yarn for the trade, such tests to be made on payment. He pointed out that there were no Testing House facilities at Bombay at present and that if the Cotton Committee's Research Department could undertake this function for the trade, it would be of great assistance to Indian manufacturers and would be a useful link between the Committee and the trade. The cost of the additional testing instruments was estimated at £750. The Sub-Committee after discussion decided that this sum should be included in the estimates for the experimental machinery; the question of the purchase of cloth-testing instruments and of

work to be undertaken for the trade should again be considered by the Central Cotton Committee, in consultation with the Technologist.

(8) *Machinery.*—The selection of the machinery required for the experimental spinning plant was delegated to a Special Sub-Committee consisting of Messrs. Mehta, Mangaldas Girdhardas and Horsman with the Secretary.

The Sub-Committee considered that fresh estimates should now be called for to an exact specification. Quotations would thus be strictly comparable as regards price. The specification should include the extra rollers, roller stands, change wheels, &c., for spinning the different counts required. It is suggested that Messrs. Mehta, Horsman, Mangaldas Girdhardas and Kay should form a Machinery Sub-Committee to advise the Secretary as to exactly what spares and stores are required.

Subject II.

Agricultural Research.

(1) Report of the first (preliminary) meeting of the Standing Research Sub-Committee recorded.

(2) Report of the second meeting of the Standing Research Sub-Committee—

(*a*) *Bombay.*—The Sub-Committee's recommendation for a grant for research on (*a*) Cotton wilt, (*b*) Plant breeding work on cottons of the American type was approved.

(*b*) The Sub-Committee's recommendations for a grant for research on the physiology of the cotton plant in Guzerat was approved.

(3) *Resolved that:—*

The Secretary should write to the various Agricultural Departments asking them to kindly furnish particulars of research in progress on Cotton Boll Worms and that a note should be circulated to members of the Central Cotton Committee.

(4) *Indore Research Institute—*

Resolved that:—

The scheme recommended by the Research Sub-Committee be accepted subject to the control of the research programme being vested in the Central Cotton Committee.

(5) *Research Scholarships.*—After discussion as to the monetary value for each scholarship necessary to secure the type of man desired the Sub-Committee's proposals were unanimously accepted.

(6) Paragraphs VI and VIII of the Sub-Committee's Report were recorded without discussion as these subjects were fully dealt with at the third meeting of the Research Sub-Committee.

(7) The Central Cotton Committee endorsed the recommendation of the Research Sub-Committee with reference to Mendelian research on cotton in the United Provinces.

REPORT OF SECOND MEETING OF RESEARCH SUB-COMMITTEE.

IV. *Indore.*—The Research Sub-Committee then considered Mr. Howard's note on the proposed Indore Research Institute, and unanimously decided that in view of the support given to this proposal by the Directors of Agriculture, United Provinces, Central Provinces and Gwalior, as well as the Central Indian States, the Central Cotton Committee should subsidise this scheme.

The Sub-Committee then proceeded to consider the joint proposal of Dr. Clouston and Mr. Mehta with regard to research studentships for cotton. The Sub-Committee approved of the principle of the proposal. They observed that the Empire Cotton Growing Committee are making provision on similar lines for the training of scientific workers for cotton research. They considered that provision for the training of future workers is of the greatest importance and of more than local application. Details of a scheme for this purpose should come before the Central Committee. In the meantime the Research Sub-Committee recommend that provision should be made in the budget for 1922-23 for six research studentships at Rs. 150 per mensem tenable for two years, that is, approximately Rs. 11,000 in the coming year.

VII. *United Provinces.*—Letter No. 561-245-B, dated the 9th August 1921, from the Director of Agriculture, United Provinces, was considered. As regards Mr. Clarke's proposal that arrangements should be made for continuity of Mendelian research on cotton at Cawnpore and for research in the physiology of the cotton plant, it was decided that the Director of Agriculture, United Provinces, should be informed that the Research Sub-Committee consider the continuation of such work extremely important and, in the event of the Local Government not being able to provide funds, the Central Cotton Committee would be prepared to subsidise work on these lines so far as their means permit.

Consideration of Report of the Third Meeting of the Standing Research Sub-Committee.

(9) *Madras Proposals.*—(*a*) Research Botanist for plant breeding investigations on *Gossypium herbaceum.* The Central Cotton Committee endorsed the Research Sub-Committee's recommendation that the provision of land and buildings is a function of the Local Government but that they would be prepared to make a recurring grant of

Rs. 12,000 per annum and a small initial grant for laboratory equipment.

(*b*) Proposal to appoint a Physiological Chemist (1) to investigate from a bio-chemical aspect the immunity from and susceptibility to disease of the cotton plant and (2) to enquire into the reasons why the same cotton in different parts of the same tract, where to all appearances conditions are exactly similar, should vary so considerably in the quality of the lint produced.

The Central Cotton Committee endorsed the Sub-Committee's recommendation that when the Madras Government are in a position to meet the initial expenditure of Rs. 1 lakh the Committee will be prepared to consider sympathetically a grant for recurring expenditure. (It was explained that the Physiological Chemist would probably not be required before 1924.)

(10) *Publications.*—The Central Cotton Committee accepted the recommendation of the Research Sub-Committee that it should be made a condition of all grants for research work that when such work is published a note should be added to the effect that a grant had been made for the purpose by the Central Cotton Committee. This was accepted as being in accordance with English practice when grants are made for scientific research.

(11) *Research on Punjab American Cotton.*—(*a*) The Central Cotton Committee accepted the recommendations of the Research Sub-Committee—

(*1*) That there is urgent need for research on Punjab American cotton, as there is grave risk that long staple cotton cultivation in the Punjab may cease.

(*2*) That the unsatisfactory yield and low quality of the present Punjab American cotton crop were largely the result of growing a type unsuited to certain seasons.

(*3*) The present type (4F) is not the best type of Punjab American cotton that can be grown.

(*4*) Research is required in—

(*i*) The isolation of pure types.

(*ii*) The adequate testing of these with different sowing dates.

(*iii*) A determination of the water requirements of these types in a series of years.

(*iv*) A study of the shedding problem using pure types. Plant development curves would systematise the information available and further physiological study would be needed into the actual causes of shedding.

(*5*) That the Central Cotton Committee should provide for an experienced cotton botanist on special terms for five years. The Punjab Agricultural Department to provide an experienced Agriculturist (who would be specially reserved for cotton work) and to second the necessary subordinate staff.

(B) After a full explanation by the Director of Agriculture, Punjab, of his difficulties and of the provision which he considered the Punjab Agricultural Department could make as regards land, laboratories and other facilities it was agreed that—

(*1*) The Central Cotton Committee should make an annual grant of Rs. 40,000 (to include the pay of the botanist).

(*2*) That if unavoidable a bungalow for the botanist should also be provided.

(*3*) That a non-recurring grant of Rs. 5,000 should be given for equipment.

(12) The following Resolution was carried unanimously :—

That the Central Cotton Committee observe with regret that many of the posts for staff for cotton work, particularly botanists which were recommended by the Indian Cotton Committee, have not yet been filled. They would urge on Local Governments the importance of filling these posts without delay, and as the cotton trade is keenly interested in the matter would invite the Local Governments to inform them what steps are being taken in order that this information should be circulated to the trade.

SUBJECT III.—The Draft Cotton Cess Bill* was approved.

SUBJECT IV.—*Collection and supply of information.*

(1) The Committee considered the Secretary's note on the work done up to date. It was unanimously decided that this work is of considerable value and should be continued and that the Secretary's note should be circulated to Agricultural Departments.

*Not printed.

(2) It was resolved that :—

All memoirs and bulletins on cotton matters should be supplied to all members of the Central Cotton Committee.

The Agricultural Adviser to the Government of India undertook to arrange this so far as Imperial publications are concerned. The Secretary was directed to approach Provincial Agricultural Departments and ask that copies of Provincial publications on cotton should be similarly supplied.

SUBJECT V.—Minutes of Finance Sub-Committe recorded.

SUBJECT VII.—*Provincial Cotton Committees.*

(1) Burmah Cotton Committee proceedings recorded.

(2) The Central Cotton Committee note with regret that the Bombay Provincial Cotton Committee had not yet been formed, whilst all other provinces had taken steps in this direction. The Secretary was directed to write to the Director of Agriculture, Bombay, and ask him to again urge upon the Bombay Government the desirability of forming a Provincial Cotton Committee, *see* also VIII (*d*).

SUBJECT VIII.

(*a*) Mr. Horsman (Upper India Chamber of Commerce) brought to the notice of the Committee a Resolution of the Irrigation Board, United Provinces, which had appeared in the daily press, recommending that "preferential (Irrigation) treatment" for American cotton should be discontinued. After discussion the following Resolution was proposed by Mr. Horsman, seconded by Mr. Roberts, and carried unanimously :—

In the opinion of the Central Cotton Committee the recommendation of the United Provinces Irrigation Board that the "preferential treatment to American Cotton (in respect to irrigation water for sowing) should be discontinued," if accepted by the United Provinces Government, would be likely to be prejudicial to long staple cotton growing in the United Provinces. In view of the value of these cottons to Indian spinners, they would deprecate any hasty change in irrigation policy and would respectfully urge that no such change should be permitted until the newly appointed United Provinces Cotton Committee and the Board of Agriculture have had an opportunity of exploring the question thoroughly.

(*b*) *Boll Weevil.*—The Central Cotton Committee recommend that—

(1) All Provincial Agricultural Departments should be advised of the danger that Boll Weevil may be imported, and asked to arrange for their entomologists to be on the look out for this insect. Likely places are Ahmedabad, Cawnpore and Nagpur, as imported American Cotton is sometimes used there and there is neighbouring cotton cultivation.

(2) The Imperial Entomologist should be asked to advise as to whether any other precautionary measures are possible.

(3) All available information should be circulated.

(*c*) *Press Communiques.*—Resolved that :—

In view of the fact that a considerable section of the public is interested in their work, the Indian Central Cotton Committee consider that, subject to the sanction of the Government of India, a communique in the form of an extract of proceedings should be furnished to the press after each meeting.

(*d*) *Establishment of pure strains of Broach cotton in Gujerat.*—Dr. Mann brought before the Committee the difficulties which the Bombay Agricultural Department met with in carrying further the introduction of pure seed of Broach cotton in Gujerat. He stated that three years ago, largely due to the previous work of Mr. Main, they were in possession of sufficient pure Broach seed to sow some 6,000 acres. The Agricultural Department had organised the sale of this seed which was in great demand, and there are now approximately 90,000 acres grown from selected seed in the Surat District. He stated that with the co-operation of the local Surat traders the Agricultural Department could control annually 6,000 acres of cotton from seed of known purity, could arrange for the roguing of the fields and organise the distribution of the seed produced which would be sufficient for some 90,000 acres. This was about the limit of the area which the Department could directly control although during the coming year, under the orders of Government, they were attempting to deal with 9,000 acres of special seed production. Broadly speaking, however, the Agricultural Department could not organise seed supply for more than 100,000 acres and the Surat, Broach and Panch Mahals Districts grew over 1,000,000 acres of cotton. The difficulty was to arrange for seed supply beyond the stage to which

the Agricultural Department could control it. He explained that they had similar problems in the Kumpta area, but that the problem was smaller. In answer to questions he explained that in Surat the custom of selling ginned cotton predominated; in Broach District the custom of selling *kapas* was more prevalent. Cotton from selected seed fetched a premium of about 10 per cent. After further discussion it was agreed that this was primarily a matter for a Bombay Provincial Cotton Committee, as, although the problem was a general one met with throughout India, its successful solution was largely a local problem. They considered that the question should be considered by a Bombay Provincial Cotton Committee, but the Central Cotton Committee would gladly consider the matter again and render any assistance possible after discussion by the Provincial Committee.

Next Meeting.—It was decided that the next meeting of the Central Cotton Committe should be held during the second half of July 1922. The Research Sub-Committee might meet earlier if necessary.

Mr. Grantham moved:—

"That the Committee desire to record their appreciation of the excellent work done by the Secretary during his deputation and of the report which he had submitted."

The motion was carried, and the President directed that it be placed on record.

THIRD MEETING—JULY 17TH AND 18TH, 1922.

SUBJECT I.

Cotton Transport Bill.

Read letter from the Government of India asking for the opinion of the Central Cotton Committee on the Bill and on the licensing system necessary to give effect to it. The Committee approved of the principle of the Bill which is in accordance with its own recommendations.

The following amendments in the text of the bill were recommended:—

Amendments proposed by the Central Cotton Committee.	Text.
Amend preamble to correspond with section 3.	A Bill to provide for the restriction and control of the transport of cotton in certain circumstances. Whereas it is expedient *for the purpose of preventing the mixing of inferior with superior varieties of cotton* to provide for the restriction and control of the transport by rail and the import of cotton into certain areas:
	It is hereby enacted as follows:—
Short title and extent.	1. (*1*) This Act may be called the Cotton Transport Act, 192 .
	(*2*) It extends to the whole of British India.
	2. In this Act, unless there is anything repugnant in the subject or context
Definitions.	(*a*) "Certified copy", in relation to a licence, means a copy of the licence certified in the manner described in section 76 of the Indian Evidence Act, 1872, by the authority by which the licence was granted; I of 1872.
	(*b*) "cotton" means all unmanufactured cotton, including cotton either ginned or unginned, cotton waste and cotton seed;
	(*c*) "cotton waste" means droppings, strippings, fly and other waste products of a cotton-mill other than yarn waste;
	(*d*) "licence" means a licence granted under this Act;
	(*e*) "notified station" means a railway station specified in a notification under section 3.

N.B.—Words in italics in the text of the Bill to be omitted.

Amendments proposed by the Central Cotton Committee.

Text.

(*f*) "prescribed" means prescribed by rules made under this Act; and

(*g*) "protected area" means an area into which the import of cotton has been prohibited by a notification under section 3.

Substitute "for the purpose of maintaining and improving the quality of cotton grown in any area in the Province."

3. (*1*) The Local Government may, *for the purpose of protecting the cotton grown in any area in the Province from being mixed with cotton of an inferior variety* by notification in the local official gazette prohibit the import of cotton into that area save under, and in accordance with, the conditions of a licence.

Power to issue notification prohibiting import of cotton into protected area.

(*2*) Any such notification may prohibit the delivery to, and the taking of delivery by, any person, at any specified railway station situated in the protected area, of cotton consigned from a railway station not situated in that area, unless such person holds a licence for the import of the cotton into that area.

4. (*1*) Notwithstanding anything contained in the Indian Railways Act 1890, or any other law for the time being in force, the station master of any railway station or any other railway servant responsible for the booking of goods *or parcels* at that station may refuse to receive for carriage at, or to forward or allow to be carried on the railway from that station any cotton* consigned to a notified station, unless both stations are in the same protected area, or unless the consignor produces a certified copy of a licence for the import of the cotton into the protected area in which such notified station is situate.

IX of 1890.

Refusal to carry unlicensed cotton.

Delete the words in italics.

**Insert* after cotton the words "other than parcels by passenger train."

N. B.—Words in italics in the text of the Bill to be omitted.

Amendments proposed by the Central Cotton Committee.

Text.

Delete the words in italics.

(*2*) Every certified copy of a licence when so produced shall be attached to the invoice when the consignment is booked *as goods and to the way-bill when the consignment is booked as a parcel*, and shall accompany the consignment to its destination, and shall there be dealt with in the prescribed manner.

(*3*) Where by or under any law in force in the territories of any State in India the import of cotton into any area, or the delivery of cotton at any railway station, situate in such State has been prohibited, the Governor General in Council may, by notification in the Gazette of India, declare that the provisions of sub-section (*1*) shall apply in respect of all cotton consigned to any such statoin as if such area and such station were respectively a protected area and a notified station, and as if any licence granted under such law were a licence granted under this Act.

Procedure where cotton arrives at notified station.

5. (*1*) Where any cotton having been consigned to a notified station arrives at that station, the station master or other railway servant responsible for the receipt and delivery to the consignee of goods *or parcels as the case may be* at that statoin shall, unless both the notified station and the railway station from which the cotton has been consigned are situated in the same protected area refuse to deliver the cotton until he is satisfied that the consignee holds a licence for the import of the cotton into the protected area in which such notified station is situated; and, if he is not so satisfied, or if, *within a reasonable time,* the consignee or some person acting on his behalf

Delete the words in italics.

Substitute 'within fourteen days'.

N.B.—Words in italics in the text of the Bill to be omitted,

Amendments proposed by the Central Cotton Committee.

Text.

* *Insert* after "consigned" the words "at the risk of the original consignor and/or consignee".

does not appear in order to take delivery, shall return the cotton to the railway station from which it was consigned, * together with an intimation that delivery of the cotton has been refused or has not been taken, as the case may be.

(2) Any station master or other railway servant receiving any cotton returned under sub-section (1), or returned with a like intimation from a railway station specified in a notification under sub-section (3) of section (4), shall cause to be served on the consignor in any manner authorised by section 141 of the Indian Railways Act, 1890, a notice stating that the cotton has been so returned and requiring the consignor to pay any rate, terminal or other charges due in respect of the carriage of the cotton to and from the railway station to which it was consigned, and such charges shall be deemed to be due from the consignor for all the purposes of section 55 of that Act. IX of 1890

Delete the words in italics if a necessary consequence of the addition to the penalties proposed in the next amendment.

Add "The Court may, at its discretion, also order the forfeiture of the cotton to Government."

6. Any person who, in contravention of the provisions of this Act, or of any notification or rule made hereunder, takes delivery of any cotton from a notified station (*or imports, or attempts to import, any cotton into a protected area*) and any station master or other railway servant who, in contravention of the provisions of sub-section (1) of section 5, without reasonable excuse, the burden of proving which shall lie upon him, delivers any cotton to a consignee or other person shall be liable to a fine not exceeding one thousand rupees, and upon any subsequent conviction to imprisonment which may extend to three months, or to fine which may extend to five thousand rupees or to both.

Penalties.

Amendments proposed by the Central Cotton Committee.

Text.

Power to make rules.

7. (*1*) The Local Government may make rules to provide for any of the following matters, namely:—

(*a*) the prevention of the import of cotton into a protected area by road, river or sea save under, and in accordance with the conditions of a licence;

(*b*) the terms and conditions to be contained in licences and the authorities by which they may be granted * and

(*c*) the manner in which licences and certified copies thereof shall be dealt with on and after the delivery of cotton to which they relate.

(*2*) Any such rules may provide that any contravention thereof or of the conditions of any licence, not otherwise made punishable by this Act, shall be punishable with fine which may extend to five hundred rupees. †

* (*b*) *Add* "notwithstanding any of the terms of the Bill such conditions may deal with the transport of cotton within a specified area and not merely with import into such area."

† It has subsequently been suggested that, as a matter of drafting, the words "or total forfeiture of the cotton" should be inserted here also. B. C. B.

Previous approval of Local Legislature to issue of notifications and rules.

8. No notification under section 3 or rule under section 7 shall be made by the Local Government of any Governor's Province, unless it has been laid in draft before the Legislative Council of the Province, and has been approved by a Resolution of the Legislative Council, either with or without modification or addition, but upon such approval being given the notification or rule, as the case may be, may be issued in the form in which it has been so approved.

Protection for acts done under Act.

9. No suit or other legal proceeding shall be instituted against any person in respect of anything which is in good faith done or intended to be done under this Act.

The amendments in the preamble and section 3 are necessary:—

(*a*) to prevent any quibble arising as to the instrinsic inferiority of any cotton,

(*b*) because it is not desirable to specifically restrict the Bill to the prevention of *mixing* as wholesale substitution is also not unknown.

Section 4 (1) and (2).—The amendments propose to confine the operation of the Bill to goods traffic in order to allow unrestricted despatch of samples. It is considered that no serious abuse would arise through unrestricted traffic of parcels by passenger train.

Section 5 (1).—The first amendment is consequent on the amendment of section 4. The second is intended to remove any ambiguity in interpretation. The third is considered to be a necessary legal provision.

Section 6.—The Committee was of opinion that unless the penalty of total forfeiture were added it would be possible for the real offenders to escape punishment by employing agents on low pay. They, therefore, advised this additional penalty. It appears that if the proposed addition be made to this section the words "or imports, or attempts to import, any cotton into a protected area" should be omitted.

Section 7 (1) (*b*).—It may be necessary in certain cases to restrict cotton transport within a protected area particularly when, in order to prevent the evasion of the Act by road transport, it is necessary to include marginal stations in the notification. To provide for this in section 3 would make the Act cumbrous; provision has consequently been made here.

Licensing System.

I. It was resolved that:—

This Committee is of opinion that it is desirable that Local Governments should give the Central Cotton Committee an opportunity to offer its views before any decision is arrived at regarding the form of license and authorities for granting the same under clause 7 (1) (b) of the Bill. (Moved by the Hon'ble Mr. Lalubhai Samaldas, seconded by Mr. Dravid and carried unanimously.)

II. It was resolved that:—

In the opinion of the Central Cotton Committee provision should be made that any one of the commodities defined under the head "cotton" in clause 2 (b) may be exempted by the Local Government from any general notification prohibiting the importation of cotton into a protected area. (Moved by Dr. Mann, seconded by Mr. Purshottamdas Thakurdas and carried unanimously.)

Licensing System.

1. It was pointed out that the principal firms requiring licenses would be spinning mills of which 23 in British India were likely to be affected in the near future with a possible 59 later on if the Act is widely utilised.

In order to provide for the smooth working of the Act the Committee recommends that mills should be given annual licenses and that the necessary supply of certified copies should be issued with the license.

2. To meet occasional requirements the Committee also recommends a system of single consignment licenses covering a definite quantity of cotton.

3. It was pointed out that annual licenses might also be required for kapas or seed, *e.g.*, in the case of cotton seed for cattle food. The Committee, therefore, recommends a separate form of general license for this purpose.

4. After considerable discussion it was resolved (by 10 votes to 9) that it was not necessary in the case of annual licenses to prescribe the maximum amount of cotton to be imported under an annual license.

FORMS OF LICENSES.

Period of License.

It was resolved that:—

Annual Licenses should run from September 1st to August 31st.

The following forms for general and annual licenses and certified copies were approved by the Committee and recommended for general adoption:—

(1) Suggested Form of Annual License (for Mills).

No. of 192 .

Under the Cotton Transport Act (Act of 192) the (Mills) situated in the protected area known as notified

by G. O. , are hereby granted a general license under section 3 of the above Act for the period September 1st, 192 , to August 31st, 192 , to import *Ginned Cotton / Cotton Waste to station for the purpose of manufacture, subject to the following conditions :—

(*a*) A certified copy of this license shall be tendered with the consignment at the despatching station.

(*b*) Cotton imported under this license shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Sd.)
Licensing Authority.

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(2) Form for Certified Copy of General License (for Mills) to be tendered at Despatching Stations.

License No. 192 . Copy No.

Under the Cotton Transport Act (Act of 192) the (Mills), situated in the protected area known as notified by G. O. , are hereby granted a general license under section 3 of the above Act for the period September 1st, 192 , to August 31st, 192 , to import *Ginned Cotton / Cotton Waste to station for the purpose of manufacture, subject to the following conditions :—

(*a*) A certified copy of this license shall be tendered with the consignment at the despatching station.

(*b*) Cotton imported under this license shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Sd.)
Licensing Authority.

Name of Consignor—
Number of Bales—
Description of cotton—
Date—

Signature of Consignor.
Signature of Station Master.

This certified copy to accompany the Invoice to railway audit and to be despatched from there to the Secretary, Indian Central Cotton Committee, Bombay.

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* Separate Licenses required.

(3) Suggested Form of Single License.

Under the Cotton Transport Act (Act of 192) Messrs. are granted a license to import to station, situated in the protected area known as notified by G. O. , $\frac{\text{bales}}{\text{maunds}}$ of from (station) for the purpose of

This license is only valid for one consignment and shall be surrendered to the undersigned, duly endorsed by the Station Master on the arrival of the consignment.

(*a*) A certified copy of this license shall be tendered with the consignment at the despatching station.

(*b*) Cotton imported under this license shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Sd.)

Licensing Authority.

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(4) Form of Certified Copy of Single License.

License No. of 192 .

Under the Cotton Transport Act (Act of 192) Messrs. are granted a license to import to station, situated in the protected area known as notified by G. O. , $\frac{\text{bales}}{\text{maunds}}$ of from (station) for the purpose of

This license is only valid for one consignment and shall be surrendered to the undersigned, duly endorsed by the Station Master on the arrival of the consignment.

(*a*) A certified copy of this license shall be tendered with the consignment at the despatching station.

(*b*) Cotton imported under this license shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Sd.)

Licensing Authority.

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* State whether ginned cotton, cotton waste, *kapas*, or cotton seed,

This certified copy to accompany the Invoice to railway audit and to be despatched from there to the Secretary, Indian Central Cotton Committee, Bombay.

Name of Consignor—

Number of Bales—

Description of Cotton—

Signature of Consignor.

Signature of Station Master.

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(5) Suggested Form of Annual License (for Cotton Seed or Kapas).

No. of 192 .

Under the Cotton Transport Act (Act of 192) Messrs.

situated in the protected area known as notified by G. O: , are hereby granted a general license under section 3 of the above Act for the period September 1st, 192 , to August 31st, 192 , to import * to station for the purpose of subject to the following conditions :—

(*a*) A certified copy of this license shall be tendered with the consignment at the despatching station.

(*b*) Cotton imported under this license shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

Date—

(Sd.)

Licensing Authority.

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* State whether unginned cotton (*kapas*) or cotton seed.

(6) Form for Certified Copy of General License (for Cotton Seed or Kapas) to be tendered at Despatching Stations.

License No. 192 . Copy No.

Under the Cotton Transport Act (Act of 192) Messrs.

situated in the protected area known as notified by G. O. , are hereby granted a general license under section 3 of the above Act for the period September 1st, 192 , to August 31st, 192 , to import * to station for the purpose of subject to the following conditions :—

(*a*) A certified copy of this license shall be tendered with the consignment at the despatching station.

(*b*) Cotton imported under this license shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Sd.)

Licensing Authority.

Name of Consignor—

Number of Bales—

Description of Cottons—

Date—

Signature of Consignor.

Signature of Station Master.

This certified copy to accompany the Invoice to railway audit and to be despatched from there to the Secretary, Indian Central Cotton Committee, Bombay.

* State whether unginned cotton (*kapas*) or cotton seed.

Disposal of Expired Licenses and Certified Copies.

The Committee recommends that expired licenses should be returned to the Licensing Authority. Certified copies should accompany the railway invoice to railway audit and be despatched from there to the Secretary, Indian Central Cotton Committee.

The object of this provision is to enable the Central Cotton Committee to watch the working of the Act.

Authority to issue Licenses.

The Committee recommends that the licensing authority should be the Director of Agriculture in each province.

Safeguarding of protected areas against misuse of Cotton imported under License.

The Committee considered this important as:—

(1) A mill might reject on arrival part of a consignment of cotton imported under license.

(2) A mill might have to dispose of cotton imported under license which subsequently proved unsatisfactory in working.

Provision must be made to meet such cases or condemned cotton would find its way into the local markets.

A proposal to insert the following conditions in the license, *viz.*:—

(*b*) This license shall become void if cotton imported under license is used for any purpose other than that declared above, and

(*c*) cotton imported into the protected area known as under this license shall not be re-exported alone or mixed with other cottons in an unmanufactured condition,

was considered to present practical difficulties in working. The condition (*b*) in the approved form of license was consequently inserted. It is considered that this will cover all cases.

RESTRICTION OF THE IMPORTATION OF COTTON INTO PROTECTED AREAS BY ROAD.

The Committee then considered a proposal by Mr. S. B. Mehta, that "the Bill should authorise the cotton markets generally, or the Municipal Nakas of the protected areas to stop and report all imports of cotton by road or sea from unprotected areas, unless good reason is shown for the importation of the same."

The procedure might be as follows :—

The Local Government* could notify a definite area for protection under section 3 of the Act. This notification would be accompanied by a list of stations defining the area from a railway standpoint and cotton from other areas would not be allowed to come in by rail.

The Local Government* might also notify a rule under section 7 (*a*) of the Bill empowering the market committees in the area notified to prohibit the admission to their markets of cotton from outside the protected areas. The market committees would then have to frame rules for giving effect to their new powers. These rules might require the prior approval of the Local Government.

The Committee considered this a practicable proposal towards the solution of a difficult subject and that, where strong cotton market committees exist, much good might result from measures of this nature.

The Secretary was directed to forward this proposal to Directors of Agriculture with the suggestion that it be examined by their Provincial Cotton Committees.

SUBJECT I-A.

Regulation of Gins and Presses.

The Committee discussed with the Hon'ble Mr. Lindsay, Secretary to the Government of India, a note in which the Committee's recommendations† were examined in detail.

* With the prior approval of the Local Legislature.

† Proceedings, July 1921.

The Committee was asked to further consider the question of the maintenance of records of ownership of cotton and power to call for a declaration of ownership in cases of specific complaint. It was pointed out in the course of discussion that most firms already maintained such records and would do so for their own protection. On the other hand it was represented that both for the checking of abuses and for the protection of the press-owner it was most desirable that it should be possible to trace back unsatisfactory cotton, not merely to the press, but to the owner. Mixing can occur, outside presses or otherwise, without the knowledge of the press-owner. The recommendation of the Local Sub-Committee of April 4th as to the necessity of proper records of ownership of cotton bales was approved. The Committee then considered the Sub-Committee's proposal that the Indian Central Cotton Committee, the East India Cotton Association and Provincial Cotton Committees should be empowered to call for a declaration of ownership of specified bales in cases of specific complaints.

Provincial representatives did not consider that Provincial Cotton Committees would require this power and the consensus of opinion was in favour of confining it to one Central Body.

It was resolved:

That the Secretary be instructed to urge on the Government of India the necessity for the maintenance of proper records of ownership of cotton bales as an essential link in the chain of record. Powers to call for a declaration of ownership of specified bales in the case of specific complaint should be vested in the Indian Central Cotton Committee.

Carried unanimously.

It was agreed that legislation requiring the marking of bales would enable the cotton trade to itself take action to see that this was properly carried out. Mr. Purshottamdas Thakurdas (President, East India Cotton Association) said that as soon as possible after the passing of the necessary legislation, the East India Cotton Association would introduce rules requiring cotton tendered under any of their contracts (whether hedge, delivery or spot) to bear proper press-marks.

Subject II.

Cotton Marketing.

Replies from the various provinces on the progress made since the report of the Indian Cotton Committee were considered.

Open Cotton Markets.

A letter from the Director of Agriculture, Madras, with a note prepared for the Madras Provincial Cotton Committee was considered. Mr. Hilson explained that a promising attempt to start a properly regulated cotton market at Tirrupur had failed (for the present at any rate) partly owing to opposition by commission agents but largely due to the fact that the Madras District Municipalities Act, under which it was proposed to constitute the market, does not give the necessary power to frame rules and to license brokers, weighmen and commission agents as in the Central Provinces.

A proposal for a special Act had been supported by the Madras Provincial Cotton Committee. There was also a demand for properly constituted markets at Adoni and Nandyal.

It was resolved :—

"*That the Central Cotton Committee re-affirms the recommendation of the Indian Cotton Committee* [*paragraph 231 (1) of the Report*] *that cotton markets on the Berar system should be established in the Madras Presidency and would respectfully urge the Madras Government to introduce the necessary empowering legislation.*"

(Proposed by the Hon'ble Mr. Lalubhai Samaldas, seconded by Mr. Kay and carried unanimously.)

Messrs. Mehta, Dravid and Clouston stated that the Central Provinces and Berar cotton markets were satisfactory and had done good. It was also pointed out that such markets are most likely to succeed where the proportion of cotton to other crops is high.

The Committee was informed that the question of cotton markets in the United Provinces was being thoroughly examined, and that a cotton market would probably be organised at Lyallpur.

The Committee agreed that the attention of Directors of Agriculture should be drawn to the fact that in no other province were such wide

powers given for the control of cotton markets as under the Central Provinces Municipal* Act and that if steps were being taken to organise cotton markets it would be necessary for this point to be examined.

Publication of Prices in Up-Country Markets.

The Committee agreed that no general recommendation was possible and that the utility of publishing prices in up-country markets would depend on local conditions.

Co-operative Sale Societies.

At the invitation of the President, Dr. Mann summarised the conclusions which had been arrived at as a result of their experience of co-operative cotton sale societies in the Southern Mahratta division. Of six societies, four had been more or less failures and two were very marked successes. They were convinced that small societies were useless. Small societies had been started by the Co-operative Department at first in order to localise sales, but they did not attract buyers. The sale societies at Gadag and Hubli, which were large societies situated at big markets, were a success. Secondly, he considered that such societies could not be worked except in co-operation with the trade, *i.e.*, with the co-operation of the *dalals*. The Co-operative Department had tried to replace the *dalals* but had failed. Wherever success had been achieved it had been by working in co-operation with the trade.

---

* CENTRAL PROVINCES MUNICIPAL ACT OF 1903.

Section 99 (1) [143 (1) of Draft Bill introduced in December 1921].

No place within the limits of a Municipality shall be used for any of the following purposes, *viz.* :—

* * * * * *

(*f*) As a yard or depot for trade in..... .....cotton..... ....except under a license obtained by the owner or occupier from the Committee and renewed annually.

Section 105 [152 (1) of Bill of 1921 (amended)].

The Committee may from time to time make by-laws, consistent with this Act.

* * * * * *

(*b*) for inspecting and regulating the use of encamping ground..... .....markets..... .. and for the charge of fees for the use of such buildings and places when vested in the Committee.

(*c*) for licensing brokers, *Commission Agents*, measurers and weighmen practising their calling in public places within the Municipality, and fixing the fees payable for such licenses and the conditions on which they are to be granted and may be revoked.

Thirdly, he emphasised the fact that their success had been due to the grading of *kapas* (*a*) for cleanliness and purity and (*b*) for ginning percentage; so that they had something definite to attract the large buyer. Much of the *kapas* sold at the auction sales was of the improved varieties introduced by the Agricultural Department. All the *kapas* from their registered seed growers (who had received farm grown seed) passed through the sale societies and formed a valuable nucleus.

In reply to the President he said that the grading of *kapas* was undoubtedly one of the great attractions. The grading was done by the Cotton Superintendent and by two or three Agricultural Graduates lent by the Agricultural Department.

Dr. Clouston enquired if any grading was done for staple.

Dr. Mann said that the staple was uniform.

Mr. Roberts said that in the Punjab auctions for Punjab American *kapas* grading was done by the Agricultural Department for cleanliness and purity. The trade appreciated the grading as was shown by the prices for the different classes.

Mr. Jacob said that grading was still done at the Agricultural Department auctions. The Co-operative Department had tried to run cotton auctions, but had failed because they were not able to do the grading.

Mr. Hilson said that in Madras auctions were held on a small scale chiefly for the *kapas* from private seed farms.

The President said that from the information before them it was clear that auction sales of graded *kapas* were successful.

In reply to a question from the Secretary, Dr. Mann agreed that at Gadag and Hubli grading by ginning percentage was really grading for purity as the ginning percentage of the selections issued by the Agricultural Department, which are also of improved staple, is higher than the ginning percentage of local varieties.

In reply to a question from the President, Messrs. Jacob and Roberts said that the necessity for auction sales in the Punjab was disappearing so far as getting a fair price of American cotton was concerned.

Dr. Mann explained the system of auction sales in Gujerat. These were at present confined to the produce of about 18,000 acres of special seed farms. These auction sales were an integral part of

their seed distribution scheme as the Agricultural Department took all the seed at the market rate for distribution to cultivators in general. Government were financing seed distribution to the extent of Rs. 1 lakh. A Government staff was provided for roguing the fields and ensuring purity. The actual auction sales were held at Surat on samples of cotton drawn by the Department. It was proposed to continue this arrangement because it was the basis of their seed supply system for the district not only for the introduction of an improved variety, but for the maintenance of purity. On the whole the prices obtained were most satisfactory. It was true that at one auction this year the cultivators refused to accept the prices offered as they did not consider the premium above ordinary Surat cotton sufficient. A practical difficulty was that as the cotton of the district improved owing to the general establishment of the improved variety, the price margin between seed farmers' cotton and the cotton of the district would narrow. This might have to be met by an increase in the price paid for the seed which would now be possible as their seed was in very general demand.

In North Broach they were confronted with another difficulty. Despite the big difference in the price of ginned cotton of the selected variety and of ordinary *Goghari* the high ginning percentage of the latter greatly reduced the difference in the price of *kapas*.

Mr. Jacob said that the probable reason of failure of co-operative auctions in Lyallpur was lack of confidence in the grading. Agricultural Department grading was essential.

Mr. Roberts pointed out that a probable subsidiary reason was the fact that fortnightly auctions were too frequent to attract buyers.

On the motion of the President it was decided that the information which had been collected should be circulated to all Directors of Agriculture.

Marketing of new varieties.

The President drew attention to the further recommendations of the Board of Agriculture of 1919. It was agreed that the Central Cotton Committee had at present nothing to add to these. The question of the Central Cotton Committee assisting in the marketing of new varieties, *e.g.*, by means of a stabilising fund, must await sanction to the Cotton Cess.

General.

Cleaner picking and the marketing of Cotton and Kapas in a cleaner condition.

The Secretary's note was considered. The Secretary pointed out that all Agricultural Departments seemed to be agreed that it was essential for the trade to offer some more definite incentive to the marketing of cleaner cotton.

Dr. Clouston said that Burma experiments apparently showed that this did not pay.

Dr. Mann said that at present cleaner marketing of *kapas* certainly did not pay the cultivator in the Kumpta area.

Mr. Pursottamdas Thakurdas said that "allowances on" were introduced in Bombay in 1917. It was decided to discuss this further in connection with Subject III, Trade Classification of Cotton.

SUBJECT III.

Trade Classification of Cotton.

The President in introducing the subject pointed out that at their first meeting the Central Cotton Committee had decided that this matter could not be taken up until the formation of the East India Cotton Association was complete. As members were aware, the East India Cotton Association had now been established and the Committee would desire to consider what steps should be taken to give effect to the recommendations in paragraph 261 (*e*) of the Indian Cotton Committee's Report.

The question of the use of standards in up-country markets was briefly discussed.

Mr. Purshottamdas Thakurdas said that the East India Cotton Association would be glad to give the Central Cotton Committee the fullest possible assistance in this matter, but it was necessary that the issue should be very clearly put before them definitely stating what was needed. He pointed out that a number of practical difficulties had to be considered in the introduction of the use of standards in up-country markets as these markets had to deal with the quality of the *kapas* delivered in a particular season which might be good or bad.

It was pointed out by the Secretary that the real point was that in many cases the cultivators could bring their kapas to the market in a cleaner condition provided that it could be shown that it would pay them to do so. Open cotton markets had been recommended as one of the means to this end, but this in itself did not seem sufficient. He felt that it was necessary for the cotton trade to meet the Agricultural Departments halfway and take steps to so organise the market that there was a definite incentive at every stage to deliver the best *kapas* or cotton possible. At present the incentive was too much in the opposite direction.

Mr. Purshottamdas Thakurdas pointed out that in many instances the cultivators were not sufficiently financially independent to be able to hold up their *kapas* for better prices and that unless they could do this it was difficult to see how better prices could be realised by the cultivator.

It was pointed out in discussion that many cultivators were in a position of comparative independence.

Dr. Clouston emphasised the importance of an adequate premium for staple.

Mr. Hilson drew attention to the fact that the Coimbatore Cotton Marketing Association prepared every year three standards of Cambodia cotton of which the highest represented approximately 25 per cent. of the crop. The standards were put up in double boxes, one sample for "class" and one for staple. He enquired whether these were of any use in Bombay.

Mr. Purshottamdas Thakurdas said that the old Bombay Cotton Trade Association standards were required by rule to agree with the Liverpool standards for Indian cottons. The same practice was followed with regard to the East India Cotton Association standards to a large extent, although they were not bound to do so by their rules. The Coimbatore Cambodia standards differed materially from the Liverpool standards.

It was pointed out that the Bombay standards for Cambodia cotton were lower than the Coimbatore standards.

After further discussion it was decided to refer the question to the Local Sub-Committee for detailed examination before taking the matter up with the East India Cotton Association.

SUBJECT IV.

Interchange of Abstract Proceedings with the Empire Cotton Growing Corporation.

It was resolved that the invitation of the Empire Cotton Growing Corporation to exchange abstract proceedings for mutual information be cordially accepted.

SUBJECT V.

The replies from Local Governments in response to Resolution 12 of the second meeting of the Central Cotton Committee asking for information as to the strength of the Agricultural Departments were recorded.

SUBJECT VI.

Confirmation of Proceedings of the Local Sub-Committee of April 4th.

The proceedings were confirmed subject to the amendments made by the Central Committee in respect to Subject I-A—Regulation of Gins and Presses.

SUBJECT VII.

Secretary's Report on revised Machinery Tenders.

This was recorded:—To be considered by the Special Machinery Sub-Committee in due course.

SUBJECT VIII-A.

Cotton Boll Weevil.

The Committee recorded their appreciation of the action taken by the Millowners' Associations to secure the burning of all blow-room waste from imported American cotton. It was agreed that no further steps could be taken in respect to this pest pending the receipt of further information. The Secretary explained that the Imperial Entomologist had written to America to obtain the latest information as to the chances of the Boll Weevil surviving the voyage to India. This information would be put before the Committee for consideration as soon as received.

SUBJECT VIII-B.

Cotton Boll Worms.

The President referred to the valuable summary which had been obtained of the work in progress in the various provinces on cotton pests. This was recorded.

SUBJECT IX (B).

Budget Estimate of the Secretary's Office for the Year 1923-24.

The Budget for the Secretary's office for 1923-24 was approved.

SUBJECT IX (C).

Dissemination of Information [Resolution IV (1) of the Second Meeting of the Central Cotton Committee.]

The Secretary drew attention to the Bulletin which had been prepared on the demand for the various types of Indian cotton and reported that 150 copies had been printed. It was decided that about 350 copies more would be required for distribution to Trade Associations, Provincial Cotton Committees, &c.

SUBJECT IX (D).

Reference from the Director General of Commercial Intelligence with regard to the Statistical Publication "Large Industrial Establishments."

The Director General of Commercial Intelligence enquired whether the retention of the two columns in the publication "Large Industrial Establishments of India" showing the number of gins in each ginning factory was necessary. He pointed out that it was essential that the volume and bulk of the statistical publications should be reduced as also the labour of compilation. Under the present system the Director of Statistics obtained a return from each concern showing the number of total and active gins and this meant considerable labour.

Mr. Kay said that he was in favour of the retention of these returns. The column showing the number of hands employed in ginning factories was of little value for trade purposes and the only information of value was the number of gins.

Mr. Freke said that many of their statistical publications had proved very useful on special occasion, *e. g.*, during the war, but the present proposal was to retain only such statistics as are required under normal conditions. The Secretary gave an instance which occurred recently showing the value of these statistics.

Mr. Purshottamdas Thakurdas said that he doubted the value of the figures for active gins until the regulation of gins and presses was in force as the returns were probably incomplete. The columns showing the total number of gins was valuable and should be retained.

Mr. Kay said that he agreed that the column showing the total number of gins was the important one. There was less need to retain the column for active gins.

Mr. Mangaldas pointed out the difficulties in obtaining accurate returns of active gins at present.

Mr. Mehta said that it was necessary to have figures for the total number of gins in each factory.

The Committee considered that the column showing the total number of gins should be retained.

Mr. Freke said that there would be very little more labour in maintaining the returns for active gins.

PRINTED AT THE YERAVDA PRISON PRESS, POONA.

ANNUAL REPORT

OF THE

Indian Central Cotton Committee,

BOMBAY,

FOR THE

YEAR ENDING 31st AUGUST, 1923.

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ANNUAL REPORT

OF THE

Indian Central Cotton Committee, Bombay,

FOR THE

Year ending 31st August, 1923.

CONTENTS.

	Page.
Personnel	2
Officers and Sub-Committees	5
Functions of the Committee	9
The work of the year	10
Cotton Transport Act	10
Regulation of Gins and Presses	18
Open Cotton Markets	21
Cleaner picking of cotton	25
Co-operative cotton marketing	28
Mixing of Punjab-American cotton	30
East India Cotton Association	32
Cotton Boll Weevil	33
Importation of cotton seed	34
Research programme	35
Research studentships	38
Central Agricultural Research Institute	38
Technological Research	40
Tours	43
Supply of information	44

APPENDICES.

I	List of members	47
II	Cotton Cess Act, 1923	49
	Cotton Cess Rules	58
III	Bombay notification under Cotton Transport Act	69
IV	Regulation of Gins and Presses Bill (Rough Draft)	81

		PAGE.
V	Bombay (District) Cotton Markets Bill (Draft)	88
	Draft Rules under the Bombay (District) Cotton Markets Bill ..	92
VI	List of Cotton Centres	107
VII	Khandwa Municipal Cotton Market Rules	110
	Burhanpur Cotton Market Rules	115
VIII	Abstract of discussion regarding Punjab-American cotton	120
IX	List of Research Students	129
X	Research Schemes	130
XI	Report on tour in Burma	132
XII	Introduction of improved types of cotton in various provinces ..	138

ANNUAL REPORT OF THE INDIAN CENTRAL COTTON COMMITTEE, BOMBAY, FOR THE YEAR ENDING 31st AUGUST, 1923.

The Central Cotton Committee, the creation of which was recommended by the Indian Cotton Committee of 1917-18, was constituted by Resolution of the Government of India, No. 404-22, Department of Revenue and Agriculture, dated 31st March 1921, as amended by Resolution No. 712-194 of 16th June 1921. A representative of the Gwalior State was added by Resolution No. 1272-194, dated the 13th October 1921.

The personnel of the Committee, as it stood on January 1st, 1923, is shown in Appendix (I).

The Committee continued to work in its capacity as an advisory committee until May 17th, 1923, from that date it was reconstituted.

The Indian Central Cotton Committee incorporated under Act XIV of 1923. The outstanding feature of the year was the passing of the Indian Cotton Cess Act and the incorporation* of the Committee as a permanent body with a definite constitution, with funds of its own and authority to undertake specific work for the improvement of cotton growing.

The new Committee was constituted by Resolutions Nos. 523 and 565 of the Governor-General in Council of 17th and 23rd May 1923, respectively (Department of Education, Health and Lands). By Resolution No. 513, dated the 16th May 1923, Mr. B. C. Burt was appointed Secretary of the Committee as now constituted.

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* For text of the Act and Rules under the Act see Appendix II.

By Resolutions Nos. 514 and 663, dated the 16th May and 11th June 1923, respectively, representatives of Sind and the Indore State were added under Section 4 (*xi*).

The personnel on August 31st was as follows :—

1. PRESIDENT.—The Agricultural Adviser to the Government of India *ex-officio*, Mr. S. Milligan (Dr. D. Clouston, Officiating).

2. REPRESENTATIVES OF AGRICULTURAL DEPARTMENTS.

Madras	.. Mr. G. R. Hilson, Cotton Specialist.
Bombay	.. Dr. H. H. Mann, Director of Agriculture.
United Provinces	.. The Director of Agriculture (Dr. H. M. Leake, M.L.C.).
Punjab	.. The Director of Agriculture (Mr. C. A. H. Townsend, M.L.A., I.C.S., Mr. D. Milne, Officiating.)
Central Provinces	.. The Director of Agriculture (Dr. D. Clouston, C.I.E., Mr. F. J. Plymen, Officiating).
Burma	.. Mr. L. Lord, Deputy Director of Agriculture.

3. THE DIRECTOR GENERAL OF COMMERCIAL INTELLIGENCE, *ex-officio* (Mr. C. G. Freke).

4. REPRESENTATIVES OF CHAMBERS OF COMMERCE AND ASSOCIATIONS.

The East India Cotton Association	.. Mr. W. Ellis Jones.
Bombay Millowners' Association.	.. Mr. S. D. Saklatvala.
Bombay Chamber of Commerce.	... Mr. V. A. Grantham, M.L.C. (*Vice-President*).

Indian Merchants' Chamber, Bombay	.. The Hon'ble Sir Purshotamdas Thakurdas, Kt., C.I.E., M.B.E.
Karachi Chamber of Commerce.	.. Mr. H. C. Short.
Ahmedabad Millowners' Association	.. Seth Kasturbhai Lalbhai.
Tuticorin Chamber of Commerce ..	.. Mr. G. Z. Meli.
Upper India Chamber of Commerce.	.. Mr. H. Horsman (Mr. A. F. Horsman, Officiating).
The Empire Cotton Growing Corporation	.. Mr. W. Roberts.

5 and 6. COMMERCIAL REPRESENTATIVES NOMINATED BY LOCAL GOVERNMENTS.

Central Provinces ..	.. Mr. S. B. Mehta, C. I. E., Mr. N. A. Dravid, M.L.C.
Madras ..	.. Mr. H. P. M. Rae (Mr. F. H. Goffe, Officiating).
Punjab ..	.. Rai Bahadur Seth Prabhu Dayal, M. B. E.
Bengal ..	.. Mr. B. K. Lahiri.

7. CO-OPERATIVE REPRESENTATIVE .. .. The Honourable Mr. Lalubhai Samaldas, C. I. E.

8. Representatives of Cotton Growers.

Madras	M.R.Ry. R. Appaswamy Naidu Garu, M.L.C. M.R.Ry. B. P. Sesha Reddi Garu.
Bombay	Rao Bahadur Bhimbhai Ranchodji Naik, Prof. S. C. Shahani.
United Provinces	The Hon'ble Khan Bahadur Nawab Muhammad Muzammil Ullah Khan, O.B. E., The Hon'ble Lala Sukhbir Sinha.
Punjab	The Hon'ble Sirdar Jogendra Singh, The Hon'ble Honorary Lieut. Rai Bahadur Chaudhri Lal Chand, O.B.E.
Central Provinces and Berar.	Rao Sahib V. G. Kulkarni, M.L.C. Mr. N. V. Deshmukh.

9, 10 and 11.—Representatives of Indian States.

Hyderabad State	(Vacant.)
Baroda State	Director of Commerce and Industries (Dr. S. M. Pagar).
Gwalior State	Deputy Director of Agriculture (Shahzad Ahmed Khan, B. Sc.).
Rajputana and Central India States.	Mr. A. Howard, C. I. E., Imperial Economic Botanist.

Additional persons nominated by the Governor-General in Council—

1. Mr. T. F. Main, representative of the Agricultural Department in Sind.
2. Mr. K. B. Tilloo, representative of the Indore State.

Secretary (appointed by the Government of India) Mr. B. C. Burt, B. Sc., M. B. E., I. A. S.

It will be seen that the principal change in the composition of the Committee as compared with the original Committee has been the provision for the direct representation of cotton growers who were originally represented only through the Agricultural Departments. The change has produced a better balanced Committee and has been a distinct advantage in dealing with such questions as the improvement of cotton marketing.

Term of office of members.—In order to provide for continuity, provision is made in the Cotton Cess Rules that official members shall hold office for a period of three years. To avoid sudden changes in membership the rules also provide that one-third of the non-official members shall retire annually in rotation but shall be eligible for re-election, retirement during the first two years being by ballot.

Meetings.—Three meetings of the Central Cotton Committee were held during the year under report on February 26th, March 1st, May 31st and September 4th-6th inclusive. The meeting of May 31st was a special meeting of the Committee as newly constituted to confirm the programme of work decided on at the February meeting, to pass rules and approve the budget.

The attendance at all meetings has been excellent and it may be mentioned that of the members of the original Committee no less than fourteen have attended every meeting since their appointment whilst four others have only been absent from one meeting held while they were out of India or which they were prevented from attending by Legislative duties.

Vice-President.—Mr. V. A. Grantham, M. L. C. (representing the Bombay Chamber of Commerce), was appointed Vice-President of the Committee for the year 1923-24.

Sub-Committees.—As required by the Cotton Cess Rules a Standing Finance Sub-Committee consisting of the following members was appointed :—

Mr. V. A. Grantham, M. L. C. (Vice-President and Chairman *Ex-officio*).

The Hon'ble Sir Purshotamdas Thakurdas, Kt., C. I. E., M. B. E.

The Hon'ble Mr. Lalubhai Samaldas, C. I. E.

The Hon'ble Honorary Lieut. Rai Bahadur Chaudhri Lal Chand, O.B.E.

Messrs. W. Ellis Jones, S. D. Saklatvala, G. Z. Meli and Dr. H. H. Mann. (Mr. H. C. Short officiates for Mr. W. Ellis Jones during the latter's absence from India.)

Under the Cotton Cess Act and Rules the Standing Finance Sub-Committee controls the finances of the Committee subject to such restrictions and directions in regard to policy as may be laid down by resolution of the Central Committee.

The Finance Sub-Committee has met on nine occasions during the year. Since the reconstitution of the Committee under the Cotton Cess Act a regular fortnightly meeting day has been adopted by this Sub-Committee.

As in the previous year a Standing Sub-Committee was appointed consisting of all members living in or near Bombay. This Sub-Committee has performed extremely important work both in settling details in connection with the Committee's various schemes and in framing specific references for the Central Committee's meetings without which it would not have been possible to cover in the time available the mass of work which has been got through.

During the year under report the Local Sub-Committee held eight meetings.

Research Sub-Committee.—A Sub-Committee comprised of Messrs. Milligan, Mann, Clouston, Hilson, Kay, Mehta and Bainbrigge Fletcher (by special invitation) met during the 4th meeting of the Central Cotton Committee to consider details of research schemes for which it was proposed that the Committee should give grants.

A new Research Sub-Committee was appointed in September to discuss new schemes of research submitted at that meeting and included:—

Dr. Clouston, Messrs. Howard, Hilson, Mann, Main, Saklatvala, Roberts, Professor Shahani‡, Sir Purshotamdas Thakurdas and the Secretary.

Selection Sub-Committee for Research Students.—A Sub-Committee was appointed at the 5th meeting of the Central Cotton Committee, settledthe details of the research scholarships by correspondence and met on September 5th to consider applications, interview candidates and appoint the 6 research students for 1923-24.

Members.—Dr. Clouston, Mr. Grantham, Dr. Mann, Dr. Leake, Dr. Pagar, Dr. Pendleton*, Messrs. Main, Hilson, Milne, Plymen, Howard and Tilloo.

The following special Sub-Committees met during the 4th and 6th meetings of the Central Cotton Committee :—

4TH MEETING.

Rules Sub-Committee.—Messrs. Milligan, Grantham, Mann, Townsend, Dravid, Parr, Ellis Jones, Pendleton and Meli.

Machinery Sub-Committee.—Messrs. Kay, Mehta, Horsman, Lahiri and Seth Prabhu Dayal.

---

‡ Absent.

* Out of India on September 5th.

Empire Exhibition Sub-Committee.—Messrs. Howard, Roberts, Hilson, Lahiri, Townsend, Dr. Clouston, Dr. Mann, Dr. Pager, Dr. Pendleton and the Secretary.

6TH MEETING.

Rules Sub-Committee.—Mr. V. A. Grantham, The Hon'ble Mr. Lalubhai Samaldas, Hon'ble Lieut. Chaudhri Lal Chand, Messrs. Meli, Horsman, Lahiri, Freke and Seth Kasturbhai Lalbhai.

Machinery Sub-Committee.—Mr. Saklatvala and Mr. Lakin (co-opted member).

Empire Exhibition Sub-Committee.—Messrs. Howard, Leake, Roberts, Milne, Mann, Hilson, Main, Pagar, Plymen and Tilloo.

Home Sub-Committee.—A Sub-Committee consisting of members in England during 1923 was appointed at the 4th meeting of the Indian Central Cotton Committee, the members being :—

Messrs. Milligan, Kay, Horsman, Mehta, Rae and Travers.

This Sub-Committee has done a considerable amount of useful work for the Committee in England more particularly in connection with the Committee's scheme for Technological Research.

Staff.—Mr. B. C. Burt was Secretary of the Committee throughout the year. The office staff was strengthened by the addition of two clerks in March last.

The appointments of the Cotton Technologist (Director of the Committee's Technological Research Laboratory) and his staff will be made shortly.

Provincial and Local Cotton Committees.—Provincial Cotton Committees have been appointed in all provinces except Bombay, and have met as below :—

Madras	.. twice.
Punjab	.. once.
Burmah	.. five times.
United Provinces ..	.. four times.
Central Provinces ..	.. thrice.

In Bengal, a Sub-Committee of the Board of Agriculture acts as a Provincial Cotton Committee.

In Bombay, four Divisional Cotton Committees have been established for Sind, Gujerat, Khandesh and the Southern Division, respectively, the Government of Bombay considering that these would be more successful than a Provincial Cotton Committee in view of the diversity of problems and the large areas under cotton comprised by each division.

In Madras, Local Cotton Committees have been formed at Nandyal, Bellary, Guntur, Tuticorin and Tiruppur (Coimbatore), dealing respectively with the Northerns, Westerns, Coconadas, Tinnevelly and Cambodia cotton tracts.

FUNCTIONS OF THE COMMITTEE.

In the Government of India Resolution constituting the Committee these are broadly stated as following the recommendations of paragraph 261 of the Indian Cotton Committee's Report. The functions of the Committee will become more sharply defined as experience is gained. Apart from its more formal activities the Committee is a central body charged with the promotion of all measures which will aid the improvement of the great Indian cotton-growing industry. Its representative character not only renders it well qualified to advise the Central and Provincial Governments in matters concerning the industry but affords a common meeting ground for all sections of the trade with the Agricultural Departments which enables difficulties to be discussed and joint action taken for the common good.

The passing of the Cotton Cess Act has placed the Committee in the possession of funds for the furtherance of research for the benefit of cotton growing.

The Work of the Year.

COTTON TRANSPORT ACT.

This Act framed on lines recommended by the Committee was passed by the Indian Legislature during the 1922-23 winter session. As explained in last year's report no attempt has been made to regulate the transport of cotton throughout India but the Act enables Local Governments, (by Notification passed by Resolution of the Provincial Legislative Council) to schedule definite areas for protection and to prohibit the import of outside cotton into such areas except under license. It is intended that licenses shall only be issued to meet genuine trade requirements and, in particular, to meet the needs of cotton spinning mills situated within a protected area—for such mills an annual general license has been advised. An exception has been made to provide for trade samples and packages of cotton not exceeding 10 lbs. in weight which do not require licenses. Once an area is notified the importation into it of cotton by rail is automatically prohibited. The possibility of evasion of the Act by importation by road, river or sea remains but in this respect rule making powers have been provided for Local Governments.

The passing of this Act enables a whole series of abuses, which have done much to spoil the good name and lower the value of Indian cotton, to be stopped. In the past not only has short staple cotton, waste and stained cotton been railed wholesale to long staple areas for mixing purposes, but *Kapas* has been imported for the same purpose the admixture taking place before ginning thus severely handicapping Agricultural Departments in their efforts to establish superior and uniform types over considerable areas. Entire substitution has also not been unknown, fully pressed bales of cotton having been railed to stations with a good reputation for subsequent despatch to Bombay under a false description.

The necessity of protecting areas growing long staple or otherwise superior cottons, especially where an improved type is being introduced by the Agricultural Department, is obvious. Mixture in such cases is a direct economic loss which falls heavily on the grower and also on the spinner. The profits made by unscrupulous middlemen though considerable are much smaller than the economic loss which their operations cause. When mixing of *Kapas* takes place the evil is heightened for, despite the provision of seed depots, a considerable quantity of the seed sown is invariably purchased from ginning factories.

It is perhaps generally not realised how important to the grower is the reputation of his particular tract. Indian cotton is marketed largely, though by no means solely, by territorial description. Evidence that cotton from a particular tract was really grown in that tract is of great importance to the cotton trade and every step that can be taken to make such evidence of origin reliable promotes confidence and leads to fuller prices being paid. In this respect also the Cotton Transport Act can be of the greatest value. But a word of warning is necessary. If the areas scheduled for protection are too small the notification will defeat its own object. The regulation of cotton transport by road cannot be attempted in too great detail for very obvious reasons. Any attempt to protect a large number of very small areas is likely to lead to a breakdown of the machinery of the Act by making evasion easy.

At any rate until experience is gained it seems desirable that the following points should receive attention when areas are notified for protection under the Cotton Transport Act.

(1) Areas should not be too small. The risk of evasion of the Act by the transport of cotton by road varies greatly in different parts of India and due consideration should be paid to this aspect of the question.

(2) It is a considerable advantage when tracts with well defined natural boundaries can be selected for notification.

(3) The areas notified should correspond as closely as possible with tracts growing recognised trade types. In other words the territorial classification, which the application of the Act tends to stereotype, should correspond as closely as possible with the recognised trade classification. It may be remarked that the East India Cotton Association (which controls the Bombay cotton market and to a great extent the "Futures" market for all India) has already given practical demonstration of its willingness to co-operate in this and similar matters. Their classification includes a list of tender stations for the various trade descriptions. Amendments to the list can be made by the Board of Directors of the Association and given adequate notice, they would undoubtedly be willing to amend the list, wherever feasible, if required to facilitate the working of the Cotton Transport Act or to remove anomalies.

(4) In selecting areas for protection due consideration should be paid to the policy adopted by the Department of Agriculture in regard to the introduction of new types of cotton. Conversely the existence of such protected areas may be expected to influence the future policy of Agricultural Departments in seed—framing distribution schemes. Action to prevent adulteration will clearly be most effective where it coincides with a definite effort on the Department of Agriculture to replace mixed cottons by uniform types.

AREAS NOTIFIED.

The Cotton Transport Act has been put into force in the greater part of the Bombay Presidency by Notification* 535 A. (Revenue) of August 1923 approved by resolution of the Bombay Legislative Council on August 18th, 1923.

As this is the first Notification under the Act a brief reference to the areas selected for notification may be permitted.

* Appendix III.

GUJERAT.—The problem in this division was by no means easy of solution. The quality of the cotton grown decreases from south to north, that grown in the south (Navsari) being one of the best of the Indian cottons in regard to staple whilst in the north a short stapled type of the same botanical variety (G. herbaceum—Broach cotton) is grown which is entirely different in spinning value. Further, the Surat and Broach districts are much interlaced with adjoining State territory more particularly Baroda and Rajpipla. Fortunately the hearty co-operation of these States was assured and the Baroda Durbar had not only agreed to pass a State law corresponding to the Indian Cotton Transport Act but undertook to do all that was possible to assist in the definition of suitable areas. Further their Department of Agriculture has for some years past worked in close consultation with the Bombay Department of Agriculture in regard to seed distribution schemes so that uniform types might be established over compact areas. The Rajpipla State has undertaken to pass its own Cotton Transport Law so as to secure the protection of Section 4 (3) of the Cotton Transport Act. Further than this the State has already enforced for the past two years an anti-mixing Cotton Law, the effect of which has been to greatly enhance the reputation of Rajpipla cotton.

The diversity of trade types appeared at one time to indicate that no less than five separate zones would be necessary. On the other hand the recent policy of the Agricultural Department has been to aim at developing one definite type of cotton in the whole of the tract south of the Nerbudda—a policy which has already met with a large measure of success.

Finally, after full consideration of all the interests involved and of the requirements of the adjoining States three zones were decided on, *viz.*, two south of the Tapti with the Mindhola river as the boundary and one (apart from the separate Rajpipla area) between the Tapti and Nerbudda. The rivers Tapti and Nerbudda afford valuable natural boundaries as

fords are few. The western boundary is in every case the sea and as soon as the promised action has been taken by adjoining States an effective boundary of hilly country with few roads will form a useful boundary on the south-east.

There remains the question of Northern Gujerat, particularly the remainder of the Broach district. The type of cotton grown is inferior to that of Southern Gujerat, but there is much useful cotton produced the value of which at present is diminished by importations of inferior cotton from the north-east. The work of the Agricultural Department here is still in a preliminary stage and local difficulties in selecting suitable boundaries are considerable especially as the territory of various Indian States is much interlaced with British territory. This area has therefore been reserved for further consideration but it is understood that it is intended to schedule a North Broach area as soon as possible.

SOUTHERN DIVISION.—The greater part of the Southern Division of the Bombay Presidency grows the types of cotton known as Kumpta and Dharwar American. It was not possible to define tracts growing these two varieties but mixing of the two is not common and is not a serious problem both being staple cottons. In this case action was necessary to deal with one outstanding abuse, *viz.*, the importation of short staple cotton and of waste from long distances by rail for mixing with Kumpta and Dharwar (American) cottons. Importation of inferior Persian cotton by sea (*via* Marmagoa) for the same purpose had also to be dealt with.

Two definite areas in the Bijapur district, the Bijapur and Bhagalkot areas respectively, separated by the river Kistna were separately notified as these cottons differ from each other considerably in commercial value and even more so from those of the Kumpta-Dharwar tract proper.

In respect to the rest of the division, having regard to the existence of good roads and of considerable existing cotton traffic by road it was decided not to attempt any distinction between the "Kumpta" and "Miraj" tracts but to concentrate on the main objective and to protect one large tract.

The Central Cotton Committee by invitation sent three representatives* to a special meeting called by the Minister of Agriculture to discuss the application of the Cotton Transport Act to the Bombay Presidency. The Local Sub-Committee subsequently submitted recommendations to the Government of Bombay in regard to the form of the notification and rules which were adopted. The license forms published with the notifications are those recommended by the Central Cotton Committee.

It will be seen that with the exception of a portion of the Gujerat Division the whole of the staple cotton growing areas of the Presidency have been protected by the Cotton Transport Act. The remaining division—Khandesh—grows entirely short staple cotton and there is no likelihood of inferior cottons being introduced.

CENTRAL PROVINCES AND BERAR.—The Central Provinces Provincial Cotton Committee has considered the question of protecting Berar and the Central Provinces from the importation of inferior cottons for mixing purposes. There is at present a tendency for Khandesh cottons to be railed or carted east, either for mixing with Berar or Central Provinces cotton or for wholesale substitution. *Kapas* from Khandesh also passes into the Berar markets. During the cotton season which has just closed the average premium of Berar cotton over Khandesh cotton *of the same grade* has been some Rs. 15 per khandy while C. P. 1. cotton (from the districts Nagpur, Chanda and Wardha) has fetched an average

* Five members of the Central Cotton Committee, Messrs. Grantham, Kay, Meli, Ellis Jones and Mr. (now Sir) Purshotamdas Thakurdas and the Secretary were present, three members representing the Chambers of Commerce and Millowners' Association which they also represent on the Central Cotton Committee.

premium over Berar cotton of Rs. 35 whilst at times the premium has been as high as Rs. 45 per khandy.

The Malkapur cotton market (Malkapur Taluq-District Buldana-Berar) has for many years been classed as a Khandesh station since much of the cotton entering this market is from Khandesh. Much of the cotton of the Malkapur Taluq goes to other markets *e.g.* Nandura where it fetches the price of Berar cotton which it is. *Kapas* from Malkapur has similarly been carted to Nandura and records of actual railway bookings have been obtained showing that fully-pressed bales have been despatched from Malkapur to Nandura and Shegaon and after re-marking re-despatched to Bombay as Berar cotton. This eastward creep of Khandesh cotton is increasing and there is every reason to suppose that it will increase further especially now that the railing of Khandesh cotton to Hubli, etc., for mixing purposes has beeen stopped by the Bombay notification.

It became clear at an early stage of the enquiry that there was little or nothing to be gained by trying to stop the movement of Malkapur cotton to other stations and that action on broader lines was necessary. There have been frequent representations from local cotton merchants that Malkapur being situated in Berar should be classified as a " Berar " station. The East India Cotton Association have agreed to this conditionally and have promised that if the Government of the Central Provinces and Berar will put the Cotton Transport Act into force to keep Khandesh cotton out they will recognise Malkapur as a Berar station. This offer of co-operation has been of no small assistance in subsequent discussions.

The Central Provinces and Berar Provincial Cotton Committee subsequent to a meeting at Malkapur (convened by the Hon'ble Member for Local Self-Government) decided that nothing short of the protection of both the Central Provinces and Berar areas would meet the case and recommended to the Local Government that the Cotton Transport Act should be applied and two areas notified for protection. The Central

Cotton Committee in endorsing this recommendation suggested that the areas should consist of ;—

(*a*) A Berar area consisting approximately of the districts of Buldana, Akola and Amraoti.

(*b*) A Central Provinces area consisting approximately of the Nagpur, Chanda, Wardha, Chhindwara, Seoni, Bhandara and Yeotmal districts.

The Yeotmal district, though part of Berar, has been tentatively included in the Central Provinces area as Yeotmal cotton is classed as "C.P. II" in Bombay. The exact boundaries of the proposed areas have yet to be worked out.

MADRAS.—The Madras Provincial Cotton Committee has recommended that the Cotton Transport Act should be put into effect forthwith to protect the "Northerns" and "Cambodia" areas.

In both these areas definite evidence has been produced that the importation of inferior cottons from outside is destroying the work of the Agricultural Department. In the Northerns area the distribution of seed of a pure type (Nandyal 14) has reached a commercial scale and this cotton commands a premium over ordinary Northerns of Rs. 50 per bale. At the same time Coconadas cotton which is markedly inferior to Northerns in staple is being imported into Nandyal for mixing purposes.

In the Coimbatore district, where not only is irrigated Cambodia cotton cultivation thoroughly stabilised but a very considerable proportion of the area is under selected strains, the importation of outside cottons at Tiruppur (the main market) is spoiling the quality and reputation of Cambodia cotton. Mixing in some of the presses is carried on in the most barefaced manner, certain presses being equipped with special mixing apparatus for ensuring a uniform mixture.

Even worse is the importation of *Kapas* of the Dharwar-American type from adjoining state territory. This results in the seed issued by ginneries being mixed. The full extent of this mischief will be realised when it is stated that the two types cross-fertilize naturally thus making the plants of future generations mongrel in character.

The Central Cotton Committee in strongly supporting the recommendation of the Provincial Cotton Committee suggested that the question of protecting the Tinnevelly cotton tract should also be examined.

REGULATION OF GINS AND PRESSES.

The Committee's proposals in this connection form a natural complement to the Cotton Transport Act, the essential feature being the provision of means by which the trade can protect itself against abuses. The importance of satisfactory evidence of origin of cotton under the present system of wholesale marketing has already been referred to and the essential feature of the Committee's scheme is to provide for the proper marking of bales which will effect this. It must be recognised that the Cotton Transport Act can only be successfully applied when it is possible to define an area growing a uniform type of cotton. In many cases long staple and short staple cottons though grown in close proximity are not mixed by growers, but are frequently mixed in ginning and pressing factories to the detriment of the reputation of the whole tract and with serious loss to the grower.

A copy of the Bill proposed by the Committee will be found in Appendix IV.

The marking of bales and the records of ownership, which it is proposed to systematize, differ but little from the procedure already followed in well-managed factories. These proposals, if given effect to, would at

once bring home malpractices to the real offender, the trade would avoid this cotton in future, and mixing, false packing, etc., would tend to become unprofitable.

The provision for compulsory weekly returns of cotton pressed has long been urged and is essential to any real improvement in Indian cotton statistics. Such returns have already been attempted on a voluntary basis in several provinces but without success, and at the present time in only one province, *viz.*, Madras, are such returns received. The information obtained from a weekly return of cotton pressed would provide trade information of the utmost importance at a time when crop forecasts cannot give what is required. It is widely recognised that the weather during the last few weeks of the crop period has a most important effect on yield which it is practically impossible to estimate accurately. Comparative figures for the cotton pressed during specified periods would give an immediate basis for comparison with previous years. The importance of accurate information of this kind in checking speculation cannot be overestimated. In addition such returns would provide a direct means of checking the accuracy of the final cotton memorandum which is based on estimated yields on a known area. It is probable that the area sown with cotton in India is known more accurately than in any cotton-growing country in the world, but the estimate of production per acre is necessarily extremely difficult. At present the only check on these estimates is furnished by the estimate of cotton used in Indian mills and the returns for cotton exported. As there is no means of ascertaining the "carry over" up-country, we have at present no satisfactory check on the forecasts for individual years, returns of the total quantity of cotton pressed would give a definite figure for the cotton produced during any year which had actually passed into commercial use although they would not give any information in regard to the amount consumed in villages for domestic purposes. In both America and Egypt periodical ginning and pressing returns are published and there seems no reason why this important reform in Indian cotton statistics should be longer delayed.

The proposal to require all ginning factories constructed in future to conform to certain minimum requirements is another recommendation of the Indian Cotton Committee. Here again this only means enforcing universally a standard adopted in all well-constructed factories. Similarly the requirement that all press-houses should be paved is already complied with by a large majority of pressing factories. The amount of damage to Indian cotton by bad handling in ginneries and presses is responsible for no small amount of general economic loss and there seems no reason for tolerating ill-constructed factories in the future.

The requirement that only correct scales and standard weights prescribed for any given district shall be used is of importance to the grower, as in many parts of the country *kapas* weighments do not take place in the market but on arrival at the ginning factory. It is not proposed to attempt to standardise cotton weights for all-India, but merely to prescribe that those weights which are authorised by local Governments for the particular district shall alone be used.

Licensing of Gins and Presses.—While the Central Cotton Committee do not believe the compulsory licensing of gins and presses throughout India to be either feasible or desirable, they do consider that this further step will be necessary in certain areas. The organisation of the trade varies greatly in different provinces and even in different parts of the same province. In some cases ginning factories are large and well-equipped and work almost entirely on contract for the owners of the cotton, but have themselves no financial interest in the cotton ginned. In other cases ginning and pressing factory owners are themselves middlemen buying *kapas* and selling cotton. While our general proposals for all India should enable the trade to protect itself against abuses, there are undoubtedly areas where deliberate mixing of different varieties of cotton is prevalent and where stronger measures may be necessary. The Committee's draft bill, therefore, makes provision for the introduction of actual licensing, where necessary, by a notification passed by

resolution of a Provincial Legislative Council. In the opinion of the Central Cotton Committee this procedure would provide the necessary safeguards in view of the fact that the Provincial Cotton Committee would be the advisory body to a Local Government in regard to licenses and that lengthy suspension or cancellation of licenses would only be made after reference to the Central Cotton Committee.

An enabling section in an India Act has been advised in preference to separate provincial legislation for several reasons. Though the introduction of a licensing system is to be optional a certain degree of uniformity of method is necessary where the system is adopted. Nor do the Committee consider that a licensing system should be introduced except with the safeguards which they propose. It is not proposed that licensing should depend for its success on an inspecting staff. The provisions of the Bill in regard to the marking of bales and records of ownership would enable malpractices to be traced to their source by the Central Cotton Committee, in cases of specific complaint. A warning could be issued at once by the Provincial Cotton Committee that a continuance of the malpractices complained of would lead to the suspension of the offending factory's license and in many cases this would doubtless be sufficient. The ignoring of warnings would of course lead to the suspension of the factory's license. It may be added that no honest ginning or pressing factory owner need suffer for the malpractices of the owner of the cotton since the record of ownership makes his position clear and further, he could in his seasonal ginning contract insert a clause requiring the customer for whom he works to indemnify him against any loss arising from a breach by the customer of the conditions of a license.

OPEN COTTON MARKETS.

During the year the Committee have devoted much time to the consideration of this matter. The Berar system of cotton markets was commended by the Indian Cotton Committee and recommended for general adoption, and certain further recommendations in matters of

detail were made by the Board of Agriculture in India in 1919. It was ascertained by the Committee that several provinces were considering the matter and that in one a definite setback had been caused by the fact that the Municipal Act (under which it was proposed to frame cotton market rules) did not give the necessary powers. In the Central Provinces (as distinct from Berar) cotton markets are governed by bye-laws under the Central Provinces Municipal Act which contains express provision for the licensing of brokers, weighmen, etc. In no other province does the Municipal Act contain adequate provision in this respect.

Enquiry showed that a separate Cotton Markets Act offered several advantages and the Committee advised Local Governments accordingly. The Bombay Government have intimated their intention of introducing a Provincial Bill for the purpose and consulted the Central Cotton Committee in regard to its provisions. The Bill as finally recommended by the Central Cotton Committee will be found in Appendix V together with a draft of the principal rules required. This draft, which the Central Cotton Committee recommend as a model, differs from the Berar law in the following important particulars :—

(1) The Berar Market Committees at present consist entirely of Municipal and cotton trade representatives. The Central Cotton Committee advise that one-half of the members should be representatives of the cotton growers of the area served by the market.

(2) No attempt has been made to define trade allowances for to do this and to forbid certain customary allowances might only lead to evasion. The draft rules provide that no allowances shall be permitted in any market which are not authorised by bye-laws made under proper sanction by the Market Committee.

(3) The definition of a market has been amended to provide that the "market proper" shall include ginning factory compounds within the market area. This is necessary as, in many parts of India, actual weighment does not take place in the market but in the ginning factories.

(4) Definite power has been given to Market Committees (subject to the sanction of an officer appointed by the Local Government for the purpose) to make bye-laws for regulating the conditions of trading. Elasticity in this respect is essential though groups of markets may find it convenient (as in the Central Provinces) to adopt similar bye-laws.

(5) The draft rules suggested by the Committee definitely lay down the status of licensed brokers and licensed weighmen. It seems most desirable that the latter should be independent of individual buyers and either be the servant of the Committee or (following an old Indian custom) should be independent and paid entirely by recognised fees.

The Committee received the clearest evidence that organised cotton markets in Berar had been of the greatest value to the cultivator. It is stated that on the average fifty per cent. of the *kapas* sold in these markets is brought in direct by growers and that although the *kapas* from outlying villages is brought in by village middlemen the grower still profits by the fairer rates prevailing in the markets. Such markets do much to bring growers into direct touch with substantial buyers (though not necessarily with consumers), and this necessarily makes for the better handling of the *kapas* since the grower sees for himself the difference in price attained. The publication of rates by Market Committees is of no small advantage.

It is also extremely likely that the establishment of such markets will permit a system of grading of produce to be established which in turn would make for the better handling by the cultivator of his *kapas*.

Honest weighments, the abolition of unfair "allowances" and the advantages of competition are further advantages to be gained. It is recognised that these markets do not of themselves solve the whole problem of enabling the grower to realise full prices for his cotton. The better financing of the cotton grower, in order to enable him to sell his crop to advantage and in particular, to make it unnecessary for him to

sell his cotton in advance, remains a separate problem. But there are many substantial growers in the more important cotton tracts who can take advantage of open markets whilst, as has been stated above, the indirect advantage spreads wider.

The opinions received from Chambers of Commerce are overwhelmingly in favour of the constitution of such markets wherever possible. Some replies give the names of centres considered suitable for such markets—a list of these will be found in Appendix VI.

The Central Provinces and Berar Provincial Cotton Committee and the Central Provinces Board of Agriculture have devoted considerable attention to the improvement of the Berar markets. The principal advance which they have recommended is the addition of growers' representatives in the Market Committees. They also attach importance to better provision for proper weighments and for the checking of illegal allowances. They further advised that Bombay official closing rates for the Fine Oomras Hedge contract should be posted next morning in the market and the employment in the larger markets of better qualified supervisors (paid from the market fund).

Details which were suggested as suitable for bye-laws are :—

(1) The forbidding of all trading by secret signs,

(2) The provision of standard weighbridges,

(3) The use of proper tickets or cards showing the rate at which a sale has been effected,

(4) Better records of the rates actually paid,

(5) Provision for different varieties of cotton being separately tendered and provision that buyers rejecting carts after weighment had started should be required to reload the cart.

(See Khandwa and Burhanpur cotton market rules Appendix VII.)

In Madras the Provincial Cotton Committee has recommended that a Provincial Bill on lines similar to the draft Bombay Bill should be introduced.

CLEANER PICKING AND MARKETING OF COTTON.

The Indian Cotton Committee recommended that the Agricultural Departments should undertake experiments in the cleaner picking of *kapas* and pointed out, very rightly, that the handling of cotton prior to ginning is an essential point. The Board of Agriculture of 1919 in considering this recommendation held that the experience of the Agricultural Departments in the past had been that cleaner picking frequently did not pay the cultivator. What seems to be required is a definite incentive, at all intermediate stages between the grower and the merchant or spinner, to the delivery of *kapas* or cotton in the best possible condition. The Committee, and in particular the Local Sub-Committee have devoted considerable attention to this matter. In Bombay cotton of high grade (*i.e.* cotton free from leaf and stain) undoubtedly fetches a considerable premium when sold " spot". The same is true, though to a less extent, in the case of cotton tendered against hedge contracts.

The Bombay Cotton Contracts Board (acting on the recommendation of the Indian Cotton Committee of 1917-18) introduced the " mutual allowance " principle in regard to cotton tendered against future contracts and their successors the East India Cotton Association continued and extended this system. Until recently allowances have been claimable up to one full " class " above the grade forming the basis of the contract. Thus for example, " Fine " Bengals cotton last season if tendered against a Fully Good Bengals contract was eligible for an allowance of about Rs. 15 per *khandi*. It should be made clear that this allowance is for grade alone and is quite distinct from any allowance on account of the " growth " tendered being tenderable at an "on" allowance for staple or style. The amount of cotton actually tendered against hedge

contracts in Bombay is a considerable proportion of the crop, though by no means as large as sometimes assumed.

It was decided by the Committee that action by the East India Cotton Association was desirable in order to emphasise the value which Bombay places on clean cotton. While the up-country merchant can secure an additional price for clean cotton when sold " spot " it is not always easy for him to sell large quantities " spot " at the price he wants. It was felt that an enhanced scale of "on" allowance would help to stabilise primary markets and would give a feeling of confidence to up-country merchants enabling them in turn to offer growers fuller prices for clean *kapas*. The East India Cotton Association readily consented to the Central Cotton Committee's request in this important matter and an amended bye-law was passed by the Board of Directors, and subsequently by the Representative Committee, providing in future that " all arbitrations and appeals regarding quality shall be subject to " mutual allowances", " on " allowances not to exceed the difference between the standard tendered against and *two* classes immediately above it." Under this rule Superfine Broach tendered against a Fully Good Broach contract or Superfine Bengals tendered against a Fully Good Bengals contract would be entitled to a full allowance for two classes instead of to the allowance for " Fine " only as in the past.

This change should give a very important incentive to the better handling of *kapas* up-country as the difference in price obtainable for really clean cotton is now of the order of six to ten *per cent.*

The Committee also had brought to their notice the very useful work which has been done by the Co-operative Cotton Sale Societies in the Southern Division, Bombay, particularly the Hubli Co-operative Cotton Sale Society, in encouraging cleaner picking of *kapas* by their members. Kumpta cotton, though a valuable cotton in respect to spinning value, has been unpopular in the past not only on account of the mixing which has gone on in Hubli but because, as usually picked,

it is a very leafy cotton. The clean-picked cotton sold by the Society fetched high prices at the auctions from Bombay buyers. The Committee were fortunately able to render the Society some assistance in interesting large buyers.

ALLOWANCES FOR STAPLE.—The Committee also had brought to their notice by the Central Provinces Department of Agriculture the fact that market conditions in Berar do not afford at present any direct encouragement to the growing of better stapled cottons. It was represented that as many of the finer varieties possess a lower ginning percentage, buyers in primary markets actually discriminate against these cottons although they subsequently mix different varieties prior to ginning to produce the average type recognised as Berar cotton. It is doubtful whether Berar cottons would fetch their present prices but for the presence of a certain amount of cotton of slightly superior staple.

The Committee discussed the possibility of "on" allowances in Bombay and staple standards to encourage the separate marketing of cottons with superior staple. After very careful examination they came to the conclusion that so long as the "hedge contracts" remain as they are and so long as the whole of the crop in Berar consists of what is known in Bombay as "fair" staple, it is impossible to introduce "on" allowances for staple for Oomras cottons. The Sub-Committee considered that the Agricultural and Co-operative Departments might with advantage take up the question of the separate marketing of better stapled cottons. This decision was endorsed by the Central Cotton Committee.

Though action through the medium of the Bombay hedge contracts was not found possible, the importance of getting for the grower an adequate premium for superior staple is fully realised by the Committee but in several important respects they must await the results which they hope to obtain from their Technological Laboratory.

The Committee also decided that the question of a stabilising fund for aiding the marketing of new varieties should be re-examined later as

this also is closely connected with the work of the Technological Laboratory.

Co-operative Cotton Marketing.—The Committee has been in communication, from time to time, with Co-operative Cotton Sale Societies most of which are situated in the Bombay Presidency. They have fortunately been able to render these societies some assistance in their work and hope to do more in future. In the meantime some very interesting information has been obtained as to the conditions essential for success. The most prosperous of these societies are those in the Southern Division (more particularly the Hubli and Gadag Societies) which organise periodical auction sales of graded *kapas* on behalf of their members and advance (at the time of delivery to the society) a reasonable percentage of the price of the *kapas*. The success of these societies is believed to be largely due to the following conditions :—

(1) As they deal principally with selected strains of cotton introduced by the Agricultural Department which are now cultivated on a commercial scale, they have a definite inducement to offer to the substantial buyers.

(2) The grading is carefully done under the supervision of the Agricultural Department and has established confidence.

(3) The quantities of cotton handled are sufficient to make up fair-sized commercial lots.

(4) The societies have been able to secure on their committees local men with a knowledge of the cotton trade.

It will be observed that these societies have not set themselves the task of entirely eliminating the middleman. Applications for assistance from several other societies have been received and some of these asked to be enabled to deal direct with millowners. In several of these cases it was impossible to do much. To begin with the cotton offered was not of any particular kind but was the ordinary cotton of

the district. Secondly the quantities which these societies handled were not large enough to interest millowners.

It is perhaps desirable to state that when a co-operative organisation sets out to eliminate intermediaries and to deal direct with the consumer, it is necessary to ensure not only that it has the capital and technical knowledge required, but that it can command a sufficient amount of cotton to enable wholesale dealing to be undertaken with success. Millowners employ merchants and brokers not because they wish to pay commission and brokerage, but because they gain the opportunity of selecting their requirements from a large range of stocks. Recent American experience in this respect is of interest. For many years Co-operative Cotton Sale Societies in America were only a very qualified success. Recently an organisation has been built up which controls some two to three million bales and which is now no small factor in the cotton market. The American organisers attribute their success to four fundamental conditions :—

(1) The societies consist of cotton growers only.

(2) Legally enforcible agreements are entered into between members and the society defining their mutual obligations and binding each member to deliver a certain minimum amount of cotton to the Society for sale.

(3) The societies control a reasonable proportion of the whole amount of the commodity handled.

(4) Complete pooling of produce.

These conditions have been found essential in America where cotton growers, generally speaking, cultivate larger areas than is the case in India. It is extremely doubtful if they could be realised in India at present. It seems clear that at present Co-operative Cotton Sale Societies in India are likely to find their best chance of success in the handling of improved cottons since they could thus offer a definite induce-

ment to substantial buyers and would not come into collision with vested interests prematurely.

MIXING OF PUNJAB-AMERICAN COTTON.

The Central Cotton Committee received a representation from the Lower Bari Doab Colony Agricultural Association pointing out that the mixing of Punjab-American cotton with *desi* (short staple) cotton was causing serious loss to the grower in the Punjab Canal Colonies and destroying the reputation of Punjab-American cotton. The establishment of this variety of American cotton is one of the outstanding successes in India in the increased production of staple cotton. The area has now been stabilised at approximately 400,000 to 500,000 acres and the crop is the most outstanding example of the replacement of short staple cotton ($\frac{1}{2}$" to $\frac{5}{8}$") by a cotton of 1" staple. Punjab-American cotton is not only in demand by Indian mills, but an important export trade has been developed. It is hardly necessary to point out how entirely different is the value to the spinner of a cotton of 1" staple containing a mixture of 10 to 50 per cent. of *desi* cotton to the value of comparatively uniform cotton of 1" commerical staple.

It has been definitely ascertained that mixing takes place almost entirely in the ginning factories. Although *desi* and American cottons are grown in adjoining fields, and will probably continue to be so grown on account of the limitations of water supply, growers up to now (and particularly since the introduction of the auction system by the Agricultural Department) have brought their *kapas* to the market unmixed. It is estimated that only 5 per cent. of the mixing which occurs is due to the growers. The most obvious remedy would appear to be the introduction of a system of licensing gins and presses (as recommended by the Indian Cotton Committee) by taking advantage of the enabling clause of the Bill for the Regulation of Gins and Presses previously referred to.

It was considered desirable to examine every alternative to licensing. At the fifth meeting of the Central Cotton Committee a suggestion was made by the Punjab representatives that action by the East India Cotton Association, and by the Bombay market in general, should be sufficient to deal with these abuses on the principle that it was the duty of the buyer to protect himself. It was shown very clearly that this suggestion did not afford a solution. It is true that Punjab-American cotton is tenderable against the Broach hedge contract and that if so tendered a minimum standard of staple is demanded. It was also shown that during the last season of 1,100 bales tendered against the hedge contract in Bombay 700 bales had been rejected on account of inferior and mixed staple in the course of arbitration. But comparatively little Punjab-American cotton is sold by this method much of it being purchased direct by exporters or mill agents up-country. Mill representatives stated that, despite the provision of their own ginning factories, they have been unable to get their full requirements of unmixed Punjab-American cotton although they were paying substantial premiums for pure cotton. It was also clearly established that the cotton from certain large growers, whose marks are known in Bombay fetched very remunerative prices on account of its purity.

A further reference was made to the Agricultural Association which supported the Committee's view that the only real remedy would be the licensing of gins and presses. The Association further considered that such action would also lead to the grower taking more care to prevent the mixing of *kapas*.

The matter was further considered at the sixth meeting of the Committee, and the views of the Punjab Provincial Cotton Committee and a meeting of cotton traders and ginners were considered. An abstract of the discussion and correspondence will be found in Appendix VIII. From this it will be seen that after very careful consideration of all alternatives the Central Cotton Committee felt that the licensing of gins and

presses in the Punjab Canal Colonies was the only real immediate remedy. A factor of considerable importance in considering this question is the present organisation of the cotton trade in the Punjab. Unlike many parts of India the owners of ginning and pressing factories in the Punjab do not work entirely or chiefly on contract for merchants who buy *kapas* and sell cotton, but are themselves cotton traders on a large scale possessing a definite financial interest in the cotton handled in their factories. There is thus no question here of making a factory owner responsible for the malpractices of others, an objection which might be urged with a certain amount of justification against the licensing of gins and presses in some parts of India.

EAST INDIA COTTON ASSOCIATION.

Reference has been made above to two respects in which the East India Cotton Association have been able to assist the Central Cotton Committee. This report would, however, be incomplete if no reference were made to the advantages to cotton marketing in general which the establishment of a strong Association representative of all sections of the trade presents. That between 1917 and 1922 the Bombay cotton market was disturbed by large speculative operations and a series of crises is common knowledge. Such speculative movements of the market are invariably to the disadvantage of the grower. Corners usually take place at the end of the season when cotton is entirely out of the grower's hands so that he does not benefit by any rise in prices and they have invariably been followed, whether the corner has been successful or otherwise, by slumps depressing the price of cotton at the beginning of the new crop period thus lowering the price to the grower. In this respect the history of prices in Bombay is parallel to that of the prices of American cotton at the time of the Patten and Sully corners. The Central Cotton Committee has taken every opportunity of urging the necessity of checking undue speculation which not only depresses the price to the grower but, by causing a lack of confidence and even a shortage of

money, interferes with the finance of the crop. They therefore recommended to the East India Cotton Association that a "gradual broadening of the hedge contracts, as they come to be used as genuine hedges by the trade is desirable". The Committee gladly recognise the spirit of co-operation in which their suggestions in regard to the improvement of cotton marketing have been received by the East India Cotton Association despite the latter's many and obvious immediate difficulties.

COTTON BOLL WEEVIL.

The damage caused by the Mexican Boll Weevil (*Anthonomus grandis*) in America is well known. The attention of the Central Cotton Committee was drawn to the risk that this pest might be introduced to India with baled cotton from America and that this risk is likely to increase as cotton is now shipped direct from the Southern States to India *via* Japan. The average import of American cotton into India during 25 years has been about 27,000 bales per annum, the imports in individual years varying from 2,000 to over 100,000 bales, the last big importation being in 1920. From information supplied by the Imperial Entomologist and by the Director of the United States of America Bureau of Entomology, it seems clear that *unless precautions are taken it will only be a matter of time before the Boll Weevil reaches India.* Once introduced there is every reason to believe that it would find conditions eminently suited to its spread. In America the Boll Weevil is credited with the destruction of something like 25 per cent. of the crop. At any rate it seems abundantly clear that the Weevil has caused a loss of at least two million bales in the American crop in each of the last two seasons, since comparatively small crops have been produced on what were almost record areas at a time when the high price of cotton gave every incentive to good cultivation and manuring. Despite very heavy expenditure, and under distinctly more favourable conditions than attainable in India, comparatively little has been achieved by way of control.

It is clear that drastic steps would be justified to obviate any risk of this pest being introduced into India and, the machinery is already in existence in the "Destructive Insects and Pests Act". Millowners' Associations and Chambers of Commerce were consulted and all agreed that immediate action is desirable. The simplest solution, *viz.*, the total prohibition of the importation of American cotton in India, is undesirable as in certain years Indian mills need this cotton—particularly when the Indian staple cotton crop is small. Fortunately an alternative exists as it is possible to prevent the introduction of the pest by adequate fumigation with Hydrocyanic Acid gas. It is known that this gas destroys the weevil (which can only reach India as the mature beetle) and that this fumigant causes no undesirable effects, American experiments having proved that it affects neither the spinning value of the cotton nor the bleaching and dyeing of the yarn and cloth.

With one exception all American cotton imported into India during recent years has been landed at Bombay and it is clearly simpler to provide fumigation at one port only. Chambers of Commerce and Millowners' Associations agree to the proposed restriction and to fumigation, the cost of which would be paid by the importer. The Central Cotton Committee has asked the Government of India to issue the necessary notification under the Destructive Insects and Pests Act and to provide for fumigation at Bombay. This recommendation has been provisionally accepted. The Committee has now arranged for the necessary preliminary experiments to settle certain technical details. In particular it is necessary to ascertain the extent to which cotton can absorb (and subsequently evolve) Hydrocyanic Acid gas, the safeguards necessary, and the most practical and economical conditions for fumigation.

APPLICATION OF THE DESTRUCTIVE INSECTS AND PESTS ACT TO COTTON SEED.

The Committee considered a reference from Government in respect to the importation of cotton seed direct by sea into Indian States, a point which had not been dealt with when the notification under the Act was issued as there was every indication that such imports would be nominal.

It came to light that cotton seed from East Africa had been imported direct to Porbander (Kathiawar State) and the State authorities were in some doubt as to how it should be dealt with. This seed had been imported for crushing, but there seems no reason to run the risk of importing strange insect pests in this way. There is an abundant supply of cotton seed of both the Indian and American types in India and the local crushing of Indian cotton seed is an industry which Government on several occasions and in various ways has attempted to encourage. The importation of African cotton seed without fumigation is clearly dangerous. It is already known that the Red African Boll-worm is distinct from those which we already have in India and that it is capable of causing considerable destruction.

The Committee suggested that the Government of India should draw the attention of the Indian States and Foreign Administrations to the grave danger to the Indian cotton crop through the importation of insect pests in cotton seed and should ask for their co-operation in making the Destructive Insects and Pests Act, 1914, effective drawing their attention to the two alternatives suggested of either (*a*) confining imports to one port only for India instead of arranging fumigation at a number of ports, or (*b*) the total prohibition of the importation of cotton seed into India except through the Agricultural Departments.

Attention was drawn to the necessity of securing the co-operation of the Portuguese Government in respect to Goa and of the French Government in respect to Pondicherry. The importation of cotton seed by overland routes, as for example, from Central Asia through Afghanis- and from Persia through Nushki, should also be watched.

RESEARCH PROGRAMME.

Reference has already been made to the fact that the passing of the Cotton Cess Act placed the Committee in possession of funds (estimated at Rs. 9 lakhs per annum during the first three years and half that

amount in succeeding years) for the encouragement of research work directed to the improvement of cotton growing and marketing. A broad outline of some of the problems which require solution was given in the last report. With the sanction of the Government of India the Committee has now adopted a definite programme. So far as purely agricultural research is concerned they will work in co-operation with Provincial Departments of Agriculture and other institutions, and the following grants-in-aid have been made for the investigation of specific problems:—

BOMBAY :—

(*a*) Research on the physiology of the cotton plant in Gujerat with special reference to the loss of crop caused by the shedding of bolls in black soil areas.

(*b*) For two investigations at Dharwar, *viz.*: (1) Research on cotton wilt and (2) Plant breeding work for the improvement of cottons of the Upland American type.

(*c*) For an investigation of the spotted boll-worm problem (Earias spp.) to be carried out at Surat.

MADRAS.—A grant has been made for plant breeding work on the herbaceum cottons of the Western tract.

A scheme for bio-chemical investigations designed to elucidate the reasons for the variation in yield from pure strains of cotton and the underlying reasons for the resistance and susceptibility to pests and diseases of certain strains of cotton has been provisionally approved and will be taken up as soon as certain details have been settled. This scheme has been delayed by the premature retirement of Dr. Norris under whose direction the work would have been carried out.

PUNJAB.—A grant-in-aid has been sanctioned for special investigations into the cotton problems of the Punjab Canal Colonies, more particularly those connected with the growing of Punjab-American cotton including the isolation and testing of pure types, the general physiological

study of the growing of American cotton under canal irrigation with special reference to the water requirements of the plant, and the causes of the loss of crop by bud, flower and boll shedding. These investigations will not, however, be limited to the American type of cotton, as in settling details of the scheme it was ascertained that it would be a considerable advantage for the same officer to direct research work on indigenous cottons. The Punjab Department of Agriculture are providing land, buildings, and equipment for this scheme and one special agricultural officer in addition to making available the entire facilities of the Department. The Central Cotton Committee are providing a special Cotton Research Botanist for these investigations. A departure has been made from the usual principle that for such aided schemes staff is appointed by the Local Government and, with the sanction of the Government of India, the Committee has undertaken to employ an experienced Botanist and to place him at the disposal of the Punjab Government for a period of five years.

CENTRAL PROVINCES.—A grant-in-aid has been made to enable more plant breeding work to be taken up for the production of cottons of improved staple for the Central Provinces and Berar. The grant enables the Economic Botanist to devote the whole of his time to this work, another officer being provided to relieve him of duties connected with the college and other crops. A special cotton staff has been appointed and the Central Provinces Government have made available the Akola Experimental Farm as a special cotton station.

UNITED PROVINCES.—In connection with an important investigation already started on the pink boll worm (P. gossypiella) a capital grant has been sanctioned for the purchase of insect proof cages which are necessary to determine certain critical factors. In certain parts of India this insect is by far the most serious pest of cottons. In Madras it has been largely brought under control by the enforcement of a Pest Act requiring the destruction of old cotton plants before a certain date

thus preventing the pest carrying over from the old crop to the new. In the United Provinces, and Northern India generally, (as in Egypt) long cycle larvæ also exist and are partly responsible for the "carry over" from one crop to the next. It may be possible to reduce the damage by the disinfection of seed. On the other hand, in order to obtain any reasonable measure of success, it may be necessary to enforce a Pest Act as in Madras. The latter procedure is not unattended with difficulty, particularly in the unirrigated portions of the cotton tract. The investigations to which the Committee are contributing are specifically designed to furnish the scientific data on which to base a definite policy.

RESEARCH STUDENTSHIPS.

At an early stage it was obvious to the Committee that one of the great difficulties in India connected with cotton improvement was the shortage of qualified workers with a knowledge of scientific methods as applied to cotton investigations. Six Research Studentships of the value of Rs. 150 per mensem will be given annually to distinguished graduates of Indian Universities to enable them to undertake research work under the direction of experienced investigators on cotton problems. In this way it is hoped to build up in the country a corps of qualified workers. The first six appointments were made at the sixth meeting of the Committee and the names of the successful applicants together with their postings will be found in Appendix IX.

CENTRAL AGRICULTURAL RESEARCH INSTITUTE FOR COTTON WORK.

Whilst the Committee consider that much can be done through grants to Provincial Agricultural Departments for the investigation of specific problems, particularly as by this method full advantage can be taken of such existing facilities as land and laboratory accommodation, they do not consider this alone sufficient. In 1922 the Committee resolved that a Central Agricultural Institute for cotton research, in some form

or another, was in their opinion essential. At an earlier meeting they had decided to recommend to the Government of India that they should be allowed to contribute from Cotton Cess funds to the proposed Plant Breeding Institute at Indore which was then under consideration. The original scheme for the Indore Research Institute contemplated a general institute for plant industry to which a number of the Central Indian States and the Government of India were to contribute jointly. Owing to financial stringency the original scheme could not be proceeded with, and in 1923 the Committee approved of a revised scheme for an Institute to be principally devoted to cotton investigations. It has been suggested that the Institute should be managed by a Board presided over by the Agent to the Governor General for the Central Indian States, and composed of an equal number of members nominated by the contributing States and Indian Central Cotton Committee respectively. As it seemed probable that the Central Indian States would agree to renew their offer of annual subsidies and that the Indore State would also, as originally offered, give 300 acres of land and certain other important facilities for the proposed Institute, the Committee offered a non-recurring grant of Rs. 2 lakhs for capital expenditure and a recurring grant towards working expenses of Rs. 70,000 per annum (with an additional Rs. 10,000 in the first year). This offer has been approved by the Government of India who have undertaken to place at the disposal of the Institute the services of Mr. and Mrs. Howard. This offer has now been communicated to the Central Indian States by the Government of India ; a favourable reply is hoped for in which case work would be started at a comparatively early date.

Indore is particularly suited for the investigation of a group of problems connected with cotton growing in what is practically the only large homogeneous cotton tract in India, *viz.*, the large area lying at the head of the Peninsula including a large portion of the Central Provinces and Berar, the Khandesh Division of Bombay, Central India proper and Bundelkhand. In parts of this area cotton cultivation is the densest

in India. In past years cottons of excellent staple were produced here, but owing to the low yields of the finer varieties, these have now been largely replaced by short staple, high ginning and more prolific varieties, although parts of the tract which as a whole contributes over one-third of the total Indian cotton crop, still grow cotton of considerable spinning value.

TECHNOLOGICAL RESEARCH.

A brief reference to the Committee's scheme was made in the last report. In the first place the Technological Laboratory will make provision for accurate spinning trials on new cottons for Agricultural Departments. More generally a study of the intrinsic spinning characters of Indian cottons and their correlation with measurable physical character is necessary. Such work is an essential complement to the plant breeding work now being carried on by the Departments of Agriculture, and is also necessary as a basis for the reform of the trade classification of cotton and an improved system of marketing.

The approval of the Government of India to this scheme has been obtained and arrangements have been made for the early appointment of a Director for the Research Laboratory and of the necessary staff including a practical spinner to take charge of the Experimental Spinning Plant. The appointment of Director† will probably have been made before this report is in print. As required by the Cotton Cess Rules applications are being considered by a special Technical Sub-Committee presided over by the Agricultural Adviser as President of the Central Committee. Applications have been invited by simultaneous advertisement in India and England. The salary offered is substantial and it is hoped that a scientist of repute will be secured.

The machinery required for the Experimental Spinning Plant has been very carefully thought out by a special Sub-Committee of spinners.

† Prof. A. J. Turner of the Manchester College of Technology has since been appointed.

with the assistance of the various firms of textile machinists to whom we are indebted for many valuable suggestions. The plant is so arranged that complete spinning tests can be carried out on relatively small quantities of cotton. In the case of special cottons from Agricultural Departments, where tests are required at an early stage in plant breeding work, it will be possible to work with quantities as small as 10 lbs. where the special routine which such small quantities involve is considered to be justified.

The necessary plant has been ordered from England and includes a complete set of Blowroom machinery, two carding engines (full size) and a complete "preparation" on the basis of 50 spindles, two Ring Spinning Frames and a small Mule. A Combing machine with the necessary Ribbon Lap and Sliver Lap machines has been included. The whole of the plant will be electrically driven and motors have been arranged for. After considerable difficulty the Committee, with the assistance of the Bombay Improvement Trust, have obtained an excellent site near the new Victoria Jubilee Technical Institute at King's Circle, Matunga. The building for the spinning plant including testing rooms and office is already under construction and the whole plant is expected to be in working order by the end of February.

The Laboratory proper will be designed and constructed after the arrival of the Director. In the meantime through the courtesy and co-operation of the Trustees of the Victoria Jubilee Technical Institute temporary Laboratory accommodation has been arranged. It was hoped at one time to construct this Laboratory and Spinning Plant actually in the grounds of the Technical Institute. Unfortunately this was not found practicable, but by obtaining a site in the immediate vicinity the Committee have achieved in a considerable measure their desire to establish their Technological Research Laboratory in the immediate neighbourhood of the foremost institution in India so far as instruction in textile technique is concerned.

With the exception of the scheme for the Indore Research Institute all the research schemes referred to above and for which grants have been sanctioned, have now been started.

It was only on the 31st May that the Committee were able to meet for the first time as constituted under the Act and to formally sanction research grants. This caused unavoidable delay in starting work, and in several instances it has not been possible for as much to be done during the present cotton growing season as was hoped. In the majority of cases preliminary work on the various problems has been started and work will now continue without interruption.

The Committee's research programme was made a definite issue during discussion of their Cotton Cess Bill in the Indian Legislature, and may be considered to have their specific approval.

In Appendix X will be found a statement of the various schemes of research to which reference has been made above, as also the Cotton Cess budget for the current year.

Other Research Schemes.—At their last meeting the Committee had under consideration the question of assisting cotton research in Sind with particular reference to the production of long staple cotton. The decision to proceed immediately with the construction of the Sukkur Barrage and the consequent provision of perennial irrigation over a large area in Sind is perhaps one of the most outstanding developments in regard to cotton growing which has taken place in India during recent years. It has already been shown by experiment that given an assured water supply Sind can produce cotton of excellent staple and at present an area of some 7,000 acres of American cotton of the Punjab-American type is being grown on the Jamrao Canal. On experimental farms considerable success has also been obtained with stapled American varieties, and some years ago Upper Egyptian cotton of a very useful type was satisfactorily produced not only on experimental farms but by cultivators. Progress so far has been inhibited by the absence of an assured supply of irrigation water.

The Committee decided that any scheme to which they could contribute for cotton research in Sind must be considered in relation to the larger question of the proper investigation of the agricultural development of Sind under perennial irrigation and that if the Government of Bombay initiate a satisfactory scheme for the above purpose, the Committee should make a contribution sufficient to cover the cost of botanical and other special investigations on cotton.

It will be seen that the programme adopted will utilise pretty fully the Committee's financial resources, and it remains to be seen whether the reduced Cess in the fourth and succeeding years will be adequate.

The Committee's financial year corresponds with the official year. The Cotton Cess Act actually came into force on March 16th, 1923, and it is as yet too early to say to what extent the Committee's estimate of receipts is accurate. In the 5½ months which have just closed actual Cotton Cess collections aggregated Rs. 4,26,589 which is slightly above the estimate. Exports during the early part of the financial year were still above the average; on the other hand receipts from mills were appreciably reduced by the Ahmedabad mill strike and there have been delays both in assessment and collection with the result that there are considerable arrears still to come in. It would appear, however, that the Committee's estimate is not far wrong for an average Indian crop.

SECRETARY'S TOURS.

The Secretary was on duty at the headquarters of the Government of India in September and again in January-February in connection with legislation in progress. In December a short tour was made in the cotton growing districts of Burma where some information was collected which supplements that contained in the Indian Cotton Committee's report.* This will be found in Appendix XI. In October a short tour was made in the Punjab Canal Colonies at the invitation of the Agri-

* The Committee did not visit Burma.

cultural Department and on his way back to Bombay he attended a meeting of the United Provinces Provincial Cotton Committee at Cawnpore. Three short visits were made to the Central Provinces in connection with the research scheme to which the Committee is making a grant, a meeting at Akola to consider the reform of the Berar cotton markets, called by the Hon'ble Minister for Self-Government, was attended, as also a cotton trade meeting and meeting of the Provincial Cotton Committee at Malkapur, and a meeting of the Provincial Cotton Committee and the Board of Agriculture at Nagpur just after the close of the year under report.

COLLECTION AND SUPPLY OF INFORMATION.

In the last report reference was made to the attempt to obtain more detailed information as to the demand both from Indian mills and from abroad for the various types of Indian cotton. As a result of a ready response from millowners and exporters it was possible to publish a bulletin on this subject which has been greatly in demand. A second edition dealing with statistics for the last export year is now under preparation and will be an improvement on the previous issue since a larger proportion of the exports have been accounted for and considerably more detailed information obtained regarding exports to Europe. The main conclusion previously arrived at *viz.*, that India has only a small margin for export of cotton fit for 20s counts and upwards, after the requirements of her own mills have been provided for, remains unmodified. On the other hand there is a very large exportable surplus varying from one to two million bales of the shortest stapled Indian cottons. For the sale of this India has been almost entirely dependent on the Japanese demand, for apart from the small amount taken for special purposes, this large quantity of cotton is shorter in staple than the general requirements of the world's spinners. This is a factor which should be taken into account in all future policies framed by Agricultural Departments for the improvement

of their cottons. The shortage of American cotton has created a world shortage which seems likely to become more intense. This shortage, however, is limited to cottons of above $\frac{7}{8}$ inch staple. At the time of writing middling American cotton is selling at some 15d. to 16d. to the lb. and Indian short staple cotton at 8d. to 9d.

As last year a note on the recent progress in the introduction of improved varieties of cotton has been contributed to the Bombay Cotton Annual which is published by the East India Cotton Association. The substance of this is reproduced in Appendix XII. It has also been possible to pass on to the trade an appreciable amount of information supplied by the Provincial Departments of Agriculture, more particularly in regard to the supply of new and improved cottons. The East India Cotton Association have kindly made arrangements by which cottons submitted by the Agricultural Departments can be officially valued for a nominal fee, and several individual members of the trade have kindly assisted in advising Agricultural Departments as to the probable value of new cottons. In the course of a few months it will be possible to arrange experimental spinning trials in the Committee's own laboratory and to give much information which it has been difficult to obtain in the past.

The Committee are again indebted to the British Cotton Industry Research Association for the supply of their weekly summary of current literature in which abstracts appear of all work published in connection with cotton growing and cotton technology and reference to the scientific work bearing on these subjects.

To the Empire Cotton Growing Corporation we are also indebted for the supply to the library and to members of the Committee not only of their own proceedings, but of the special reports obtained by them on cotton prospects in other parts of the Empire. They have further recently undertaken to supply us information in regard to special cotton legislation in other countries. The Corporation's

quarterly journal, of which the first number is expected shortly, should be of very great interest to all interested in the development and improvement of cotton growing.

CONCLUSION.—The Committee has every reason to be satisfied with the year's work. Though large in number it is by no means unwieldy, and the value of its fully representative character is becoming more and more obvious. It will be seen that the ground covered has involved a very considerable amount of work and it would have been impossible for the Committee to put forward such a record of achievement but for the loyal way in which it has been supported by its members. In particular the unofficial members, especially representatives of the cotton trade, have devoted very considerable time to the work of the Committee and that despite the fact that they all occupy positions of great responsibility in the commercial world.

To the Vice-President and to the members of the Local and Finance Sub-Committees the Committee are greatly indebted for very many hours' solid and patient work on difficult matters of detail.

B. C. BURT.

APPENDIX I.

LIST OF MEMBERS OF THE INDIAN CENTRAL COTTON COMMITTEE AS ON 1ST JANUARY 1923.

1. Mr. S. Milligan, the Agricultural Adviser to the Government of India (*President*).

2. Mr. C. G. Freke, I. C. S., The Director General of Commercial Intelligence.

3. The Hon'ble Mr. Lalubhai Samaldas, C.I.E., Co-operative Representative.

4. Mr. S. M. Jacob, I. C. S., Director of Agriculture, Punjab.

5. Dr. D. Clouston, C.I.E., Director of Agriculture, Central Provinces.

6. Dr. H. H. Mann, Director of Agriculture, Bombay.

7. Mr. T. F. Main, Deputy Director of Agriculture, Sind.

8. Mr. A. Mckerral, Deputy Director of Agriculture, Burma.

9. Dr. H. M. Leake, M.L.C., Director of Agriculture, United Provinces.

10. Mr. G. R. Hilson, Cotton Specialist, Madras.

11. Mr. V. A. Grantham, M.L.C., Deputy Chairman, Bombay Chamber of Commerce.

12. Mr. J. A. Kay, Chairman, Bombay Millowners' Association.

13. The Hon'ble Mr. Purshotamdas Thakurdas, C.I.E., M.B.E., Indian Merchants' Chamber and Bureau, Bombay.

14. Mr. W. Ellis Jones, East India Cotton Association.

15. Seth Mangaldas Girdhardas, M.L.C., President, Ahmedabad Millowners' Association.

16. Mr. F. G. Travers, Karachi Chamber of Commerce.

17. Mr. S. B. Mehta, C.I.E., Central Provinces Commercial Representative.

18. Mr. N. A. Dravid, M.L.C., Central Provinces Commercial Representative.

19. Mr. H. P. M. Rae, Madras Commercial Representative.

20. Mr. G. Z. Meli, Tuticorin Chamber of Commerce.

21. Mr. H. Horsman, Upper India Chamber of Commerce.

22. Seth Prabhu Dayal, M.B.E., Punjab Commercial Representative.

23. Mr. B. K. Lahiri, Bengal Representative.

24. Mr. Mazhar Husain, Director of Agriculture, Hyderabad.

25. Dr. Sankarrao Madhavrao Pagar, M.A., Ph. D., Director of Commerce and Industries, Baroda.

26. Mr. A. Howard, C.I.E., Imperial Economic Botanist, nominated by the Rajputana and Central India States.

27. Mr. Robert L. Pendleton, B.Sc., Ph. D., Director of Agriculture, Gwalior, Central India.

28. Mr. W. Roberts, British Cotton Growing Association Punjab Limited, Khanewal, Punjab.

29. Mr. B. C. Burt, B.Sc., M.B.E., F.C.S., Secretary.

APPENDIX II.

INDIAN COTTON CESS ACT OF 1923.

(ACT No. XIV OF 1923.)

An Act to provide for the creation of a fund for the improvement and development of the growing, marketing and manufacture of cotton in India.

Whereas it is expedient to provide for the creation of a fund to be expended by a Committee specially constituted in this behalf for the improvement and development of the growing, marketing and manufacture of cotton in India; It is hereby enacted as follows:—

Short title and extent.

1. (1) This Act may be called the Indian Cotton Cess Act, 1923.

(2) It extends to the whole of British India (including British Baluchistan and the Sonthal Parganas), except Aden.

Definitions.

2. In this Act, unless there is anything repugnant in the subject or context,—

(*a*) "Collector" means, in reference to cotton consumed in a mill in British India, the Collector of the district in which the mill is situated;

(*b*) "the Committee" means the Indian Central Cotton Committee constituted under this Act;

(*c*) "cotton" means raw cotton, whether baled or loose, which has been ginned;

(*d*) "Customs-collector" and "customs-port" mean respectively a Customs-collector and a customs-port as defined in section 3 of the Sea Customs Act, 1878; VIII of 1878

(*e*) "mill" means any place which is a factory as defined in section 2 of the Indian Factories Act, 1911, and in which cotton XII of 1911
is converted into yarn or thread either for sale as such or for conversion into cotton goods as defined in section 3 of the Cotton Duties Act, 1896; and II of 1896.

(*f*) "prescribed" means prescribed by rules made under this Act.

Imposition of cotton cess.

3. There shall be levied and collected on all cotton produced in India and either exported from any customs-port to any port outside British India or consumed in any mill in British India, a cess at the rate of two annas per standard bale of four hundred pounds avoirdupois, or, in the case of unbaled cotton, of six pies per hundred pounds avoirdupois:

Provided that the cess shall be levied and collected at double the above rates until the expiry of three years from the commencement of this Act.

Constitution of Indian Central Cotton Committee.

4. As soon as may be after the commencement of this Act, the Governor General in Council shall cause to be constituted a Committee consisting of the following members, namely:—

(*i*) The Agricultural Adviser to the Government of India;

(*ii*) six persons representing, respectively, the Agricultural Departments of the Local Governments of Madras, Bombay, the United Provinces, the Punjab, the Central Provinces and Burma and nominated respectively by those Local Governments;

(*iii*) the Director General of Commercial Intelligence;

(*iv*) nine persons nominated, respectively, by the East India Cotton Association, the Bombay Millowners' Association, the Bombay Chamber of Commerce, the Indian Merchants' Chamber, Bombay, the Karachi Chamber of Commerce, the Ahmedabad Millowners' Association, the Tuticorin Chamber of Commerce, the Upper India Chamber of Commerce and the Empire Cotton Growing Corporation;

(*v*) four persons representing the cotton manufacturing or cotton ginning industry, of whom two shall be nominated by the Local Government of the Central Provinces and one by each of the Local Governments of Madras and the Punjab;

(*vi*) one person nominated by the Local Government of Bengal;

(*vii*) one person having knowledge of co-operative banking nominated by the Governor General in Council;

(*viii*) ten persons representing the cotton growing industry in Madras, Bombay, the United Provinces, the Punjab, and the Central Provinces and Berar, of whom two shall be nominated by each of the Local Governments of those Provinces;

(*ix*) three persons nominated, respectively, by the Government of His Exalted Highness the Nizam of the Hyderabad State, by the Durbar of the Baroda State and by the Durbar of the Gwalior State;

(*x*) one person nominated jointly by the Durbars of the Indian States in Rajputana and Central India; and

(*xi*) such additional persons as the Governor General in Council may, by notification in the *Gazette of India*, appoint:

Provided that if, within the period prescribed in this behalf, any authority or other person fails to make any nomination which it or he is entitled to make under this section, the Governor General in Council may himself appoint a member or members, as the case may be, to fill the vacancy or vacancies.

Incorporation of the Committee.

5. (*1*) The Committee so constituted shall be a body corporate by the name of the Indian Central Cotton Committee, having perpetual succession and a common seal with power to acquire and hold property both moveable and immoveable and to contract, and shall by the said name sue and be sued.

(*2*) The Agricultural Adviser to the Government of India shall be *ex-officio* President of the Committee.

(3) The Secretary of the Committee shall be a person, not being a member of the Committee, appointed by the Governor General in Council.

Delivery of monthly returns.

6. (*1*) The owner of every mill shall furnish to the Collector, on or before the seventh day of each month, a return stating the total amount of cotton consumed or brought under process in the mill during the preceding month,

together with such further information in regard thereto as may be prescribed:

Provided that no return shall be required in regard to cotton consumed or brought under process before the commencement of this Act.

(2) Every such return shall be made in such form and shall be verified in such manner as may be prescribed.

Collection of cess by Collector.

7. (1) On receiving any return made under section 6, the Collector shall assess the cotton cess payable in respect of the period to which the return relates, and if the amount has not already been paid shall cause a notice to be served upon the owner of the mill requiring him to make payment of the amount assessed within ten days of the service of the notice.

(2) If the owner of any mill fails to furnish in due time the return referred to in section 6 or furnishes a return which the Collector has reason to believe is incorrect or defective, the Collector shall assess the amount payable by him in such manner, if any, as may be prescribed, and the provisions of sub-section (1) shall thereupon apply as if such assessment had been made on the basis of a return furnished by the owner:

Provided that, in the case of a return which he has reason to believe is incorrect or defective, the Collector shall not assess the cess at an amount higher than that at which it is assessable on the basis of the return without giving to the owner a reasonable opportunity of proving the correctness and completeness of the return.

(3) A notice under sub-section (1) may be served on the owner of a mill either by post or by delivering it or tendering it to the owner or his agent at the mill.

Collection of cess on exported cotton.

8. In respect of cotton exported by sea, the cess shall be assessed and levied by the Customs Collector at the customs-port of export and, subject to the provisions of this Act and of any rules made thereunder, shall for all or any of the purposes of the Sea Customs Act, 1878, be deemed to be a duty of customs.

VIII of 1878

Finality of assessment and recovery of unpaid cess.

9. (*1*) An assessment made in accordance with the provisions of section 7 or section 8 shall not be questioned in any Court.

(*2*) Any owner of a mill who is aggrieved by an assessment made under section 7 may, within three months of service of the notice referred to in sub-section (1) of that section, apply to the Local Government for the cancellation or modification of the assessment and, on such application, the Local Government may cancel or modify the assessment and order the refund to such owner of the whole or part, as the case may be, of any amount paid thereunder.

(*3*) Any sum recoverable under section 7 may be recovered as an arrear of land revenue.

Power to inspect mills and take copies of records and accounts.

10. (*1*) The Collector or any officer empowered by general or special order of the Local Government in this behalf shall have free access at all reasonable times during working hours to any mill or to any part of any mill.

(*2*) The Collector or any such officer may at any time, with or without notice to the owner, examine the working records, sale records and accounts of any mill and take copies of or extracts from all or any of the said records or accounts for the purpose of testing the accuracy of any return or of informing himself as to the particulars regarding which information is required for the purposes of this act or any rules made thereunder.

(*3*) Where any officer other than the Collector proposes to examine under sub-section (2) any record or account containing the description or formulæ of any trade process, the owner of the mill may give to the said officer, for transmission to the Collector, a written notice of objection and the officer shall thereupon seal up the record or account pending the orders of the Collector.

Information acquired to be confidential.

11. (*1*) All such copies and extracts and all information acquired by a Collector or any other officer from an inspection of any mill or warehouse or from any return submitted under this Act shall be treated as confidential.

(2) If the Collector or any such officer discloses to any person other than a superior officer any such information as aforesaid without the previous sanction of the Local Government, he shall be punishable with imprisonment which may extend to six months and shall also be liable to fine:

Provided that nothing in this section shall apply to the disclosure of any such information for the purposes of a prosecution in respect of the making of a false return under this Act.

Application of proceeds of cess.

12. (1) On the last day of each month, or as soon thereafter as may be convenient, the proceeds of the cess recovered during that month shall, after deduction of the expenses, if any, of collection and recovery, be paid to the Committee.

(2) Subject to such conditions as may be prescribed, the said proceeds and any other monies received by the Committee shall be applied to meeting the expenses of the Committee and the cost of such measures as it may, with the previous approval of the Governor General in Council, decide to undertake for promoting agricultural and technological research in the interests of the cotton industry in India.

Validation.

13. No act done or proceeding taken under this Act shall be questioned on the ground merely of the existence of any vacancy in or any defect in the constitution of the Committee or the Standing Finance Sub-Committee, if any.

Dissolution of Committee.

14. The Governor General in Council may, by notification in the *Gazette of India*, declare that, with effect from such date as may be specified in the notification, the Committee shall be dissolved, and on the making of such declaration all funds and other property vested in the Committee shall vest in His Majesty and this Act shall be deemed to have been repealed.

Power of the Governor General in Council to make rules.

15. (1) The Governor General in Council may make rules for the purpose of carrying into effect all or any of the provisions of this Act.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely :—

(*a*) for prescribing the time within which nominations shall be made under section 4 whether in the first instance or on the occurrence of vacancies;

(*b*) for prescribing the term of office of the members of the Committee;

(*c*) for prescribing the circumstances in which and the authority by which any member may be removed;

(*d*) for the holding of a minimum number of meetings of the Committee during any year;

(*e*) for the maintenance by the Committee of a record of all business transacted and the submission of copies of such records to the Governor General in Council;

(*f*) for the definition of the powers of the Committee and of the Secretary to enter into contracts which shall be binding on the Committee, and the manner in which such contracts shall be executed;

(*g*) for the regulation of the travelling allowances of members of the Committee and of their remuneration, if any;

(*h*) for the definition of the powers of the Committee and the Secretary in respect of the appointment, promotion and dismissal of officers and servants of the Committee, and in respect of the creation and abolition of appointments of such officers or servants;

(*i*) for the regulation of the grant of pay and leave to officers and servants of the Committee, and the payment of leave allowances to such officers and servants, and the remuneration to be paid to any person appointed to act for any officer or servant to whom leave is granted.

(*j*) for the regulation of the payment of pensions, gratuities, compassionate allowances and travelling allowances to officers and servants of the Committee;

(*k*) for prescribing the establishment and maintenance of a provident fund for the officers and servants of the Committee, and

for the deduction of subscriptions to such provident fund from the pay and allowances of such officers and servants, other than Government servants whose services have been lent or transferred to the Committee;

(*l*) for prescribing the preparation of budget estimates of the annual receipts and expenditure of the Committee and of supplementary estimates of expenditure not included in the budget estimates, and the manner in which such estimates shall be sanctioned and published.

(*m*) for defining the powers of the Committee, the Standing Finance Sub-Committee, if any, the President and the Secretary, respectively, in regard to the expenditure of the funds of the Committee, whether provision has or has not been made in the budget estimates or by re-appropriation for such expenditure, and in regard to the re-appropriation of estimated savings in the budget estimates of expenditure;

(*n*) for prescribing the maintenance of accounts of the receipts and expenditure of the Committee and providing for the audit of such accounts;

(*o*) for prescribing the manner in which payments are to be made by or on behalf of the Committee, and the officers by whom orders for making deposits or investments or for withdrawals or disposal of the funds of the Committee shall be signed;

(*p*) for determining the custody in which the current account of the Committee shall be kept, and the bank or banks at which surplus monies at the credit of the Committee may be deposited at interest, and the conditions on which such monies may be otherwise invested;

(*q*) for prescribing the preparation of a statement showing the sums allotted to Provincial Departments of Agriculture or institutions not under the direct control of the Committee for expenditure on research, the actual expenditure incurred, the outstanding liabilities, if any, and the disposal of unexpended balances at the end of the year;

(*r*) the assessment, levy, and payment of the cotton cess in respect of cotton exported by sea; and

(*s*) any other matter which is to be or may be prescribed.

Power of the Committee to make rules.

16. The Committee may, with the previous sanction of the Governor General in Council, make rules, consistent with this Act and with any rules made under section 15 to provide for all or any of the following matters, namely—

(*a*) for the appointment of a Standing Finance Sub-Committee and the delegation thereto of any powers exercisable under this Act by the Committee;

(*b*) for prescribing the method of appointment, removal, and replacement and the term of office of members of the Standing Finance Sub-Committee, and for the filling of vacancies therein;

(*c*) for the appointment of the dates, times and places for meetings of the Committee and the Standing Finance Sub-Committee; and for regulating the procedure to be observed at such meetings;

(*d*) for determining the circumstances in which security may be demanded from officers and servants of the Committee, and the amount and nature of such security in each case;

(*e*) for determining the times at which and the circumstances in which payments may be made out of the provident fund and the conditions on which such payments shall relieve the fund from further liability;

(*f*) for determining the contribution if any, payable from the funds of the Committee to the provident fund;

(*g*) for regulating generally all matters incidental to the provident fund and the investment thereof;

(*h*) for defining the powers and duties of the Secretary of the Committee.

Publication of rules.

17. All rules made under section 15 or section 16 shall be published in the *Gazette of India* and, on such publication, shall have effect as if enacted in this Act.

GOVERNMENT OF INDIA.

DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

NOTIFICATION.

Agriculture.

SIMLA, *the 23rd May* 1923.

No. 567. In exercise of the power conferred by section 15 of the Indian Cotton Cess Act, 1923 (XIV of 1923), the Governor General in Council is pleased to make the following rules:—

1. *Short title.*—These rules may be called the Indian Cotton Cess Rules, 1923.

2. *Definition.*—In these rules "Act" means the Indian Cotton Cess Act, 1923.

3. *Term of office.*—The term of office of every member of the Committe, other than the Agricultural Adviser to the Government of India and the Director General of Commercial Intelligence, shall be three years from the date on which his nomination or appointment is notified in the *Gazette of India.*

Provided that—

(*a*) of the thirty-five members first nominated under clauses (*ii*), (*iv*,) (*v*), (*vi*), (*vii*), (*viii*), (*ix*), and (*x*) of section 4 of the Act, twelve members, to be selected by lot, shall vacate office on the expiration of one year from the date of the constitution of the Committee, and of the remainder of the said thirty-five members, twelve members, so selected, shall vacate office on the expiration of two years from the said date;

(*b*) a member who is nominated or appointed to fill a vacancy other than a vacancy occurring under clause (*a*) shall hold office for so long as the person whose place he fills would have been entitled to hold office if the vacancy had not occurred.

4. *Nominations.*—Every vacancy shall be filled by nomination or appointment under section 4 of the Act. All nominations under section 4

of the Act shall be made within 30 days from the date on which such nominations are called for by the Secretary of the Committee.

5. *Minimum number of meetings.*—Not less than two meetings of the Committee shall be held in any one year.

6. *Records of business.*—A record shall be maintained of all business transacted by the Committee, copies of which shall be submitted to the Governor General in Council, to all local Governments and to all bodies by whom members are nominated.

7. *Power to contract.*—(1) Subject to the provisions of sub-rule (3) of rule 11, the Committee may enter into contracts provided that every contract which extends over a period of more than 3 years or involves expenditure in excess of Rs. 50,000 shall require the previous sanction of the Governor General in Council.

(2) The Committee may by resolution delegate to the Standing Finance Sub-Committee, President or Secretary, such power of entering into contracts, on its behalf as it may think fit.

(3) Contracts shall not be bindng on the Committee unless they are executed by the President or Vice-President and by the Secretary, and are certified by the common seal of the Committee.

(4) Neither the President nor the Secretary nor any member of the Committee shall be personally liable for any assurance or contract made by the Committee, but any liability arising under such assurance or contract shall be discharged from the monies at the disposal of the Committee.

8. *Allowances and remuneration.*—(1) Save with the previous sanction of the Governor General in Council no remuneration other than travelling allowance and halting allowance shall be paid to any member of the Committee on account of his services as such.

(2) A member of the Committee who is not an official shall be entitled to draw, in respect of any journey performed for the purpose of attending a meeting of the Committee or of a duly constituted sub-committee thereof, such travelling and halting allowances as would be admissible in respect of such journey to Government servants of the first grade serving under the Government of India.

9. *Appointment of officers and servants.*—(1) Save as provided in section 5 of the Act, all appointments of officers and servants of the Committee shall be made by the Committee; Provided that—

(*a*) appointments to posts requiring academic or technical qualifications shall be made on the recommendation of an expert sub-committee nominated for the purpose of which the President shall be chairman;

(*b*) an appointment to a post of which the maximum salary exceeds Rs. 500 per mensem shall not be made without the previous sanction of the Governor General in Council;

(*c*) appointments to posts of which the maximum pay does not exceed Rs. 250 per mensem may be made by the Secretary.

(2) The authority competent to dismiss, promote or degrade an officer or servant of the Committee shall be the authority empowered to appoint such officer or servant.

(3) The Committee may by resolution delegate to the Standing Finance Sub-Committee, President or Secretary, such of its powers under this rule as it may deem fit.

(4) The power of the Committee, the Standing Finance Sub-Committee, President and Secretary, to create new appointments shall be subject only to—

(*a*) the limitation attaching to the powers of the authority concerned to enter into contracts or to make appointments, and

(*b*) the existence of Budget provision.

10. *Leave, pay and allowanees.*—(1) The grant of leave, pay and allowances to permanent Government servants whose services have been lent or transferred to the Committee shall be regulated by the Governor General in Council. The pay and allowances of such Government servants shall be defrayed in the first instance by the Governor General in Council who shall be re-imbursed by the Committee for such payments in such manner and in such instalments as he may direct.

(2) The grant of leave, pay and allowances to officers and servants of the Committee, who are not Government servants shall be regulated by the Committee, who may delegate such of its powers in this respect as it

may deem fit to the Standing Finance Sub-Committee, President or Secretary.

(3) In exercising the powers conferred by sub-rule (2) the Committee shall, so far as may be, apply the principles of the Supplementary Rules made by the Governor General in Council under the Fundamental Rules.

(4) Save with the previous sanction of the Governor General in Council no travelling allowance shall be paid to any officer or servant of the Committee in excess of the amount which would be admissible under the said Supplementary Rules to a Government servant of the corresponding grade.

11. *Budget.*—(1) The Committee shall in each year prepare a budget for the ensuing year and shall submit it for the sanction of the Governor General in Council on or before such date as he may appoint.

(2) The budget shall be in such form as the Governor General in Council may direct and shall include statements of—

(*a*) the estimated opening balance;

(*b*) the estimated receipts from the cotton cess and from other sources;

(*c*) the proposed expenditure classified under such major heads as the Governor General in Council may direct.

(3) Proposals involving expenditure in more than one financial year shall not be included in the budget until they have received the previous approval of the Governor General in Council under sub-section (2) of section 12 of the Act.

(4) Supplementary estimates of expenditure shall be submitted for the sanction of the Governor General in Council in such form and on such dates as he may direct.

12. *Power to incur expenditure.*—(1) Subject to the provisions of the Act and the rules framed thereunder the Committee may incur such expenditure as it may think fit and may delegate to any of its officers or to the Standing Finance Sub-Committee such financial powers as it may consider expedient:

Provided that, save with the sanction of the Governor General in Council, no expenditure shall be incurred which is in excess of the sanctioned budget allotment under any major head.

(2) Re-appropriations within a major head of expenditure may be made by the Committee which may delegate its powers in this respect to the Standing Finance Sub-Committee, President or Secretary.

(3) Re-appropriations between major heads of expenditure shall not be made save with the previous sanction of the Governor General in Council.

13. *Audit and publication of accounts.*—(1) The Committee shall maintain accounts of all receipts and expenditure.

(2) Such accounts shall be audited annually by auditors appointed in this behalf by the Governor General in Council, and such auditors may disallow any item which in their opinion has been spent otherwise than in accordance with the Act or these rules.

(3) If any item is so disallowed an appeal from the disallowance shall lie to the Governor General in Council whose decision shall be final

(4) The accounts of receipts and expenditure relating to each financial year, together with the auditor's report thereon, shall be submitted to the Governor General in Council as soon as may be after the close of that year. The accounts and auditor's report shall be published in the *Gazette of India.*

(5) The accounts of receipts shall include a statement of all sums received by the Committee during the financial year which shall be shown under the following heads :—

(*a*) monies received under section 12 of the Act;

(*b*) other monies received by the Committee;

(*c*) interest received from the investment of such monies as aforesaid.

(6) Total receipts only shall be shown under each of the heads specified in sub-rule (5) and the opening balance shall also be stated.

(7) Expenditure incurred during the financial year shall be shown under the following heads :—

(*a*) administration of the Committee;

(*b*) measures taken for promoting agricultural research;

(*c*) measures taken for promoting technological research.

(8) The closing balance of the year shall be shown at the foot of the accounts on the expenditure side.

14. *Custody and disbursement of funds.*—(1) The current account of the Committee shall be kept in the Imperial Bank of India and all monies at the disposal of the Committee with the exception of petty cash and of monies placed in fixed deposit or invested in accordance with the provisions hereinafter contained shall be paid into that account..

(2) Any funds not required for current expenditure may be placed in fixed deposit with any Bank approved in this behalf by the Governor General in Council or invested in the name of the Committee in any security in which trust property may lawfully be invested under the Indian Trusts Act, 1882.

(3) Placing of money in fixed deposit and the investment thereof and the disposal of monies so placed or invested shall require the sanction of the Standing Finance Sub-Committee or, if no such Sub-Committee is in existence, of the President.

(4) Payments by or on behalf of the Committee shall be made in cash or by cheque drawn against the current account of the Committee.

(5) The cheques referred to in sub-rule (4) and all orders for making deposits or investments or for the withdrawal of the same or for the disposal in any other manner of the funds of the Committee shall be signed by the Secretary and countersigned by one member of the Standing Finance Sub-Committee or, if no Standing Finance Sub-Committee is in existence, by the President.

15. *Annual statements of grants-in-aid.*—Every Provincial Department of Agriculture to which sums have been allotted by the Committee for expenditure on research and every other institution not under the direct control of the Committee to which sums have been so allotted, shall furnish to the Committee at the close of each financial year statements of the sums so allotted, of the actual expenditure incurred therefrom, of the outstanding liabilities, if any, and of the unexpended balances of sums so allotted.

M. S. D. BUTLER,

Secretary to the Government of India.

DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

NOTIFICATION.

Agriculture.

SIMLA, *the 13th June*, 1923.

No. 682.—In exercise of the power conferred by section 15 of the Indian Cotton Cess Act, 1923 (XIV of 1923) the Governor General in Council is pleased to direct that the following amendments shall be made in the Indian Cotton Cess Rules, 1923, namely :—

After rule 15 of the said rules the following rules and Forms shall be inserted, namely :—

Form and Verification of Return.

16. The return referred to in section 6 of the Act shall be in Form A annexed to these rules and a declaration of the truth of such return shall be subscribed in the terms set forth at the foot of the said Form.

Check of return by Collector.

17. For the purpose of satisfying himself of the correctness of any such return the Collector shall check the same in such manner as he thinks fit, and may for this purpose cause the records and accounts of the mill to which the return relates to be examined and compared with the entries in the return.

Form of notice under section 7 (1).

18. The notice referred to in sub-section (1) of section 7 of the Act shall be in Form B annexed to these rules.

Assessment under section 7 (2).

19. If the owner of any mill fails to furnish in due time the return referred to in section 6 of the Act, or furnishes a return which the Collector after completion of the check referred to in rule 17 believes to be incorrect or defective, the Collector shall, subject to the provisions of the Act, use such methods as he may think fit for the ascertainment of the amount payable under the Act and shall assess the same accordingly.

FORM A.

(SEE RULE 16.)

Return under section 6 of the Indian Cotton Cess Act, 1923 (XIV of 1923) for the month of _____ 192 .

(*a*) Name of Mill _____

(*b*) Name of owner or Agents _____

(*c*) Average number of spindles working during month. } Mule Spindles _____ Ring Spindles _____

(*d*) Number of lbs. avoirdupois of Indian cotton consumed or brought under process in the mill during the month of _____ 192 . .. . _____

(*e*) Equivalent to bales of 400 lbs. each .. _____

(*f*) Cess at ½ annas per bale .. .. Rs. a. p.

(*g*) Amount remitted herewith / to Local Treasury by Cheque / Draft / Money Order / Notes and Cash. ..

(Score out (*g*) if remittance does not accompany return).

I do hereby declare that I have compared the above particulars with the records and books of my mill, and that they are, in so far as I can ascertain, accurate and complete.

Dated this _____ day of _____ 192 .

(Signed) _____

(To be signed by the Mill-owner, Managing Agent, or other principal officer of the Mill).

Note.—Cotton imported from outside India and cotton waste are not liable to the cess. The expression "India" in section 3 of the Act includes British India and Indian States.

FORM B.

(SEE RULE 18.)

Notice of demand of payment of Cotton Cess under Section 7 of Act XIV of 1923.

_____ COLLECTOR'S OFFICE,

Dated _____ 192 .

To _____

_____

_____

Take notice that the Cotton Cess on the _____ mill for the month of _____ has been assessed at _____ and that on behalf of Government I hereby demand payment by you of the sum of Rupees _____ now due and unpaid on account of cotton cess for the month of _____ and that if the above amount be not paid into this office within ten days after the date of service hereof on you I shall proceed to obtain payment of the same according to the provisions of the Indian Cotton Cess Act, 1923.

M. S. D. BUTLER,

Secretary to the Government of India.

GOVERNMENT OF INDIA.

DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

NOTIFICATION.

Agriculture.

SIMLA, *the 28th June* 1923.

No. 775.—The following rules which have been made by the Indian Central Cotton Committee in exercise of the power conferred by section 16 of the Indian Cotton Cess Act, 1923 (XIV of 1923), and, with the previous sanction of the Governor General in Council, are hereby published in pursuance of section 17 of the said Act:—

1. Before the 1st of April 1924 and before the 1st of April in each subsequent year the Committee shall appoint a Standing Finance Sub-Committee (hereinafter referred to as "the Finance Sub-Committee") consisting of eight members of the Committee inclusive of the Chairman, who shall hold office for twelve months commencing from the 1st April.

2. The Vice-President for the time being of the Committee shall be the *ex-officio* Chairman of the Finance Sub-Committee.

3. Any casual vacancy occurring in the number of the Finance Sub-Committee may be filled by the remaining members of the Finance Sub-Committee, subject to the approval of the President of the Committee.

4. If any member of the Finance Sub-Committee be absent from India the remaining members may in their discretion declare his absence to constitute a casual vacancy and fill the same in accordance with rule 3.

5. The Chairman of the Finance Sub-Committee shall preside at all meetings of that Committee. If the Chairman shall not be present at any meeting, the members present shall elect a Chairman to preside at such meeting.

6. Four members of the Finance Sub-Committee, including the Chairman, present in person shall constitute a quorum at any meeting of the Finance Sub-Committee.

7. Meetings of the Finance Sub-Committee shall ordinarily be convened by the Chairman, but may be convened by the Secretary of the

Committee either on the written request of not less than three members of the Finance Sub-Committee or, in case of emergency, on his own initiative.

8. Four clear days notice of every meeting of the Finance Sub-Committee shall be given to each member who shall for the time being be in India except in case of emergency when, at the discretion of the Vice-President, two clear days notice shall be sufficient.

9. In case of a difference of opinion amongst the members of the Finance Sub-Committee, the opinion of the majority shall prevail.

10. If there shall be an equality of votes on any question to be decided by the Finance Sub-Committee, the Chairman shall have a casting vote.

11. Subject to such restrictions as may be at any time imposed by the Committee, the Finance Sub-Committee shall exercise all the powers of the Committee in regard to the control and disposal of the funds of the Committee, and such other powers as may be delegated to it by the Committee.

12. *Powers and duties of the Secretary.*—The Secretary of the Committee shall be the principal Executive Officer of the Committee and shall keep a record of the proceedings of the Committee and of the Finance Sub-Committee. The Secretary shall be responsible for the control of the staff, and, save as otherwise provided by rule, shall exercise such powers as the Committee may direct.

M. S. D. BUTLER,

Secretary to the Government of India.

APPENDIX III.

REVENUE DEPARTMENT.

BOMBAY CASTLE, 18*th August* 1923.

No. 535-A.—In exercise of the powers conferred by section 7 of the Cotton Transport Act, 1923 (III of 1923), the Government of Bombay is pleased to make the following rules to carry out the purposes of the said Act, namely :—

1. *Licensing Authority* : *Form of application for a license.*—Licenses for the import of cotton into the protected areas will be granted by the Director of Agriculture, Bombay Presidency, and application should be made to that officer in Form A annexed to these rules.

2. No cotton of which the import has been prohibited by or under section 3 of the Cotton Transport Act, 1923, shall be imported into a prohibited area by road, river or sea save under and in accordance with the conditions of a license issued as provided by these rules.

3. *Licenses for import of cotton for manufacture.*—(1) Annual licenses for import by rail shall be granted to manufacturing concerns situated within the protected areas for the importation of cotton or of any specified kind of cotton from outside such area for manufacture only. Such licenses shall be in Form B hereto annexed and shall be subject to the conditions stated therein..

(2) A certified copy of such licenses shall be tendered in Form C hereto annexed with each consignment at the despatching station and shall accompany the railway invoice to the station of delivery and shall then be forwarded by the Railway authority concerned to the railway audit office for return to the Secretary, Indian Central Cotton Committee.

(3) The license shall be returned to the licensing authority at the expiration of the period for which it is granted together with all unused certified copies of the same.

4. *License for particular consignment by rail.*—(1) A single license to cover only one consignment may be granted to such persons as can satisfy the licensing authority that it is necessary to import cotton or any specified kind of cotton (that is, cotton seed, kapas, ginned cotton or cotton waste) into the protected area. Such licenses shall be in Form D hereto annexed and shall be subject to the conditions stated therein.

(2) Such license shall be surrendered at the station of delivery to the Station Master or other prescribed officer at the time of taking delivery of the cotton covered by the license who shall forward it to the licensing authority.

(3) A certified copy of such license shall be tendered in Form E hereto annexed with each consignment at the despatching station and shall accompany the railway invoice to the station of delivery and shall then be forwarded by the Railway authority concerned to the railway audit office for return to the Secretary, Indian Central Cotton Committee.

5. *License for particular consignment by road, river or sea.*—(1) A single license to cover only one consignment may be granted to such persons as can satisfy the licensing authority that it is necessary to import cotton or any specified kind of cotton (that is, cotton seed, kapas, ginned cotton or cotton waste) by road, river or sea into the protected area. Such licenses shall be given in Form F annexed and shall be subject to the conditions stated therein.

(2) Such license shall be delivered at the 'naka','bunder' or other place specified by the licensing authority to the officer mentioned in the license who shall forward it to the licensing authority.

6. *Separate licenses to be issued for different kinds of cotton.*—Separate licenses will be issued for different kinds of cotton that is to say for ginned cotton, cotton seed, unginned cotton (kapas and cotton waste).

7. *Penalty.*—Any contravention of these rules or of the conditions of any license, not otherwise punishable under the said Act, shall be punishable on conviction by a Magistrate with fine which may extend to five hundred rupees.

FORM A.

Application for License.

(SEE RULE 1.)

To

THE DIRECTOR OF AGRICULTURE, BOMBAY PRESIDENCY.

SIR,

I/We the undersigned hereby beg to apply for a license under the Cotton Transport Act, 1923 (Act III of 1923), available for the period of to for the importation *by* rail/road/river/sea of bales of/maunds (state whether ginned cotton, unginned cotton (kapas), cotton seed or cotton waste), into the protected area known as notified in G.N., R.D., No. dated at station for the purpose of

I/We also beg to apply for a certified copy of the license (as required by the said Act) :—

2. I/We declare that such cotton/kapa/cotton seed/waste is required for the purpose of only and will not be otherwise used save under the instructions of the licensing authority.

Reasons why importation is necessary (*a*)

(*a*) Reasons should be clearly stated as licenses are only issued in cases of proved necessity.

In the case of applications for licenses to import by road, river or sea the form should be modified as may be necessary.

3. $\frac{I}{We}$ undertake :—

(1) in the event of the $\frac{\text{cotton}}{\frac{\text{kapas}}{\text{cotton seed}}}$ waste imported under the said license proving unsuitable for the purpose for which it is imported, to report the matter to the licensing authority and to await his approval to its disposal otherwise before allowing such $\frac{\text{cotton}}{\frac{\text{kapas}}{\text{cotton seed}}}$ waste to leave our premises ;

(2) that under no circumstances will $\frac{I}{we}$ allow $\frac{\text{cotton}}{\frac{\text{kapas}}{\text{cotton seed}}}$ waste imported under the said license to be used for mixing with, or adulteration of $\frac{\text{cotton}}{\frac{\text{kapas}}{\text{cotton seed}}}$ produced in the protected area for re-export nor will $\frac{I}{we}$ allow it to be re-exported under a misdescription ;

(3) to return the said license on expiration to the licensing authority together with such details as he may require as to the $\frac{\text{cotton}}{\frac{\text{kapas}}{\text{cotton seed}}}$ waste imported under it and of its subsequent disposal.

Dated Signed

at

INSTRUCTIONS.

(*a*) The Cotton Transport Act does not impose any general restriction on cotton transport but only on transport into specified areas (notified by Local Governments for protection) from stations outside those areas. Each notification includes a schedule of railway stations in the protected area to which it refers. Licenses are only required by concerns situated within the limits of a protected area. Licenses granted under the Cotton Transport Act are available for the importation of cotton *from* anywhere in India but only *to* the stations specified.

(*b*) Cotton, as defined in the Act, includes ginned cotton, unginned cotton (kapas), cotton seed and cotton waste but separate licenses are required for each. Separate rules are also in force for the importation into protected areas of cotton by road, river or sea.

(*c*) Station masters, at all stations in India, are *empowered* by section 4 of the Act to refuse to book cotton to a notified station in a protected area unless a certified copy of the license is handed in when the cotton is tendered for booking. Each consignment requires a separate certified copy which will accompany the railway invoice to destination.

(*d*) Station masters at notified stations are *required* by section 5 of the Act to refuse delivery of cotton from outside the protected area (which is defined by a list of stations) unless accompanied by a certified copy of the license (or unless the original license is produced).

(*e*) Paragraph 2 in the application form corresponds with condition (*b*) of the license the object being to safeguard the protected area against the misuse (which might be quite unintentional) of cotton imported under license.

(*f*) The protected areas notified in the Bombay Presidency are those contained in Government Notification, Revenue Department, No. 535-A., dated 18th August 1923.

FORM B.

Annual General License (for Mills.)

(SEE RULE 3.)

No. OF 192 .

Under the Cotton Transport Act, 1923 (Act III of 1923), the (Mills), situated in the protected area known as notified by G. N. , are hereby granted a general license under section 3 of the said Act for the period September 1st , 192 , to August 31st,

192 , to import * to station for the purpose of manufacture, subject to the following conditions :—

(*a*) A certified copy of this license shall be tendered with the consignment at the despatching station.

(*b*) Cotton imported under this license shall not be used except for the purpose stated above, save under the instructions of the licensing authority.

(Sd.)

Licensing Authority.

Dated 192.

* Here enter ginned cotton, cotton waste, *kapas* or cotton seed for which license is granted.

This certified copy should accompany the invoice to railway audit and should be despatched from there to the Secretary, Indian Central Cotton Committee, Bombay.

FORM C.

Certified Copy of General License (for Mills) to be tendered at Despatching Stations.

(SEE RULE 3.)

LICENSE NO. 192 . COPY NO.

Under the Cotton Transport Act, 1923 (Act III of 1923), the (Mills), situated in the protected area known as notified by G. N. are hereby granted a general license under section 3 of the said Act for the period September 1st, 192 , to August 31st, 192 , to import to station for the purpose of manufacture, subject to the following conditions :—

(*a*) A certified copy of this license shall be tendered with the consignment at the despatching station.

---

* Here enter article.

(*b*) Cotton imported under this license shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Sd.)

Licensing Authority.

Name of Consignor .

Number of bales

Description of cottons

Signature of Consignor

Signature of Station Master

Dated 192 .

FORM D.

Single License (for consignment by rail).

(SEE RULE 4.)

Under the Cotton Transport Act, 1923 (Act III of 1923), Messrs. are granted a license to import to station, situated in the protected area known as notified by G. N. $\frac{\text{bales}}{\text{maunds}}$ of * from (station) for the purpose of

This license is only valid for one consignment and shall be surrendered to the undersigned, duly endorsed by the Station Master of the station of delivery on the arrival of the consignment :—

(*a*) A certified copy of this license shall be tendered with the consignment at the despatching station.

---

* State whether ginned cotton, cotton waste, *kapas* or cotton seed.

(*b*) Cotton imported under this license shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Sd.)

Licensing Authority.

Dated 192 .

This certified copy should accompany the invoice to railway audit and should be despatched from there to the Secretary, Indian Central Cotton Committee, Bombay.

FORM E.

Certified copy of single license in Form D.

(SEE RULE 3.)

LICENSE No. OF

Under the Cotton Transport Act, 1923 (Act III of 1923), Messrs. are granted a license to import to (station, situated in the protected area known as notified by G. N. $\frac{\text{bales}}{\text{maunds}}$ of from (station) for the purpose of

This license in only valid for one consignment and shall be surrendered to the undersigned, duly endorsed by the Station Master of the station of delivery on the arrival of the consignment :—

(*a*) A certified copy of this license shall be tendered with the consignment at the despatching station.

---

* State whether ginned cotton, cotton waste, *kapas* or cotton seed.

(*b*) Cotton imported under this license shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Sd.)

Licensing Authority.

Name of Consignor
Number of bales
Description of cotton

Signature of the Consignor
Signature of the Station Master

Dated 192 .

FORM F.

Single License for consignment by road, river or sea.

(SEE RULE 5.)

Under the Cotton Transport Act, 1923, Messrs. / Mr. are / is granted a license to import to situated in the protected area known as notified by G. N. bales / maunds of from for the purpose of

This license is only valid for one consignment and shall be surrenderd to the officer in charge of the at on the arrival of the consignment:—

(*a*) Cotton imported under this license shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Sd.)

Licensing Authority.

Dated 192 .

By order of the Government of Bombay (Transferred Departments),

C. W. A. TURNER,
Acting Secretary to Government.

REVENUE DEPARTMENT.

BOMBAY CASTLE, *18th August* 1923.

No. 535-A.—Whereas it is necessary for the purpose of maintaining the quality and reputation of the cotton grown in the areas in the Bombay Presidency mentioned in Schedule I hereto appended.

Now, therefore, in excercise of the powers conferred by sub-section (1) of section 3 of the Cotton Transport Act, 1923 (III of 1923), the Government of Bombay is hereby pleased to prohibit the import of cotton into the said areas save under and in accordance with the conditions of a license prescribed in this behalf.

(2) The Government of Bombay is further pleased to prohibit, under sub-section (2) of section 3 of the said Act, the delivery to, and the taking of delivery, by, any person, at any of the Railway stations specified in the Schedule II hereto appended of any cotton when such cotton has been consigned from a railway station not situated in the said areas unless such person holds the prescribed license for the import of cotton into the said areas.

SCHEDULE I—PROTECTED AREAS.

I. *The South Surat Area* consisting of that portion of the Surat District lying between the Par river on the south and on the north the Mindhola river up to the point where the Mindhola river is met by the Bardoli-Walod road and thence along that road up to the boundary of the village of Pavaran and thence along the western boundary of the Walod Mahal up to the Purna river and thereafter the Purna river up to the eastern boundary of the Walod Mahal and bounded on the west by the sea and on the east by the eastern boundary of the Surat District.

II. *The Surat Area* consisting of that portion of the Surat District bounded on the west by the sea and on the east by the eastern boundary of the Walod Mahal and on the north by the Tapti river and on the south by the Mindhola river up to the point where the Mindhola river is met by the Bardoli-Walod road and thence along that road up to the boundary of the village of Pavaran and thence along the western boundary of the Walod Mahal up to the Purna river and thereafter the Purna river up to the eastern boundary of the Walod Mahal.

III. *The Olpad-Ankleshwar Area* consisting of those portions of the Surat and Broach Districts which lie between the Nerbudda and Tapti rivers.

IV. *Bagalkot Area* consisting of that portion of the Bijapur District lying south of the River Krishna.

V. *Bijapur Area* consisting of that portion of the Bijapur District which lies north of the Krishna and south of the River Bhima.

VI. *The Kumpta-Dharwar Area* consisting of that portion of the Bombay Presidency within the following boundaries—

On the north the northern boundaries of the Ratnagiri and the Satara Districts and the southern boundary of the Sholapur District,

On the south the southern boundary of the Presidency,

On the west the sea and the Portuguese territory,

On the east the western boundry of the Sholapur and Bijapur Districts and the northern and eastern boundaries of the Dharwar District,

and more particularly shall consist of the Ratnagiri, Satara, Belgaum, Dharwar and North Kanara Districts of the Bombay Presidency.

SCHEDULE II—RAILWAY STATIONS INCLUDED IN THE PROTECTED AREAS.

I. *The South Surat Area.*—Maroli, Navsari, Vedcha, Amalsad, Billimora, Dungri, Bulsar, Gandevi, Kalvach, Chikhli Road, Rankuwa, Dholikuwa and Anawal.

II. *The Surat Area.*—Sachin, Udhna and Surat on the B. B. and C. I. Railway and Nio, Chalthan, Gangadhra, Bardoli, Timberva and Madhi on the Tapti Valley Railway.

III. *The Olpad-Ankleshwar Area.*—Panoli, Ankleshwar, Kosamba, Kim, Sayan and Utran.

IV. *Bagalkot Area.*—All stations on the Hotgi-Gadag section of the M. and S. M. Railway from Sitamani to Badami inclusive.

V. *Bijapur Area.*—All stations on the Hotgi-Gadag section of the M. and S. M. Railway from Almati to Lachyan inclusive.

VI. *The Kumpta-Dharwar Area.*—All stations on the M. and S. M. Railway between Wathar on the north and Chaigeri on the south on the Poona-Bangalore Line.

All stations from Castle Rock on the Marmagoa line on the west to Harlapur on the Gadag-Hospet branch on the east.

All stations from Gadag to Alur inclusive on the Gadag-Hotgi branch.

All stations from Miraj to Kolhapur on the Kolhapur branch, and the Sangli station on the Sangli branch.

By order of the Government of Bombay (Transferred Departments)

C. W. A. TURNER,

Acting Secretary to Government.

APPENDIX IV.

ROUGH DRAFT BILL FOR THE REGULATION OF GINS AND PRESSES.

Preamble.

Whereas it is expedient for the purpose of preventing the adulteration of Indian cotton and for maintaining and improving its quality and reputation and to provide for the better regulation of cotton ginning and pressing factories, and for the improvement of statistical returns it is hereby enacted as follows :—

Short Title.

1. This Act may be called the "Cotton Ginning and Pressing Factories Act 192 ."

Definitions.

2. In this Act unless there is anything repugnant in the subject or context.

(*a*) Cotton pressing factory means a factory as defined in the Indian Factories Act, 1922, where cotton is pressed into bales.

(*b*) Cotton ginning factory means any place where cotton is ginned or where the cotton fibre is separated from the cotton-seed by any process whatever involving the use of steam, water or other mechanical power or electrical power whatever the number of persons employed.

(*c*) Cotton means ginned or unginned cotton, cotton-seed or cotton waste except where either of these forms of cotton is separately specified.

(*d*) Kapas means unginned cotton.

(*e*) Cotton waste means the droppings, strippings, fly and other waste products other than yarn waste of a cotton mill or of a cotton ginning factory or of a cotton pressing factory.

(*f*) Bale means any pressed package of cotton of whatever size or density.

(*g*) Certified copy means a copy certified in the manner described in section 76 of the Indian Evidence Act by the person by whom it is delivered.

(*h*) Indian Central Cotton Committee means the Indian Central Cotton Committee constituted under the Indian Cotton Cess Act of 1923, or any duly constituted Sub-Committees appointed by Resolution of the Indian Central Cotton Committee for the purposes of the Act.

(*i*) Provincial Cotton Committee means a Provincial Cotton Committee appointed by a Local Government under this Act.

(*j*) Prescribed means prescribed by rules made under this Act.

3. The owner of every cotton pressing factory shall cause every bale pressed to be consecutively numbered and clearly marked, in such manner as may be prescribed, with a serial number and with the prescribed mark of the press. Every bale shall be marked before removal from the press-house.

4. (1) The owner of every cotton pressing factory shall cause to be maintained at the factory, in such form (if any) as may be prescribed, a press register containing a daily record showing the number of bales pressed, the serial number of each bale, and the name of the person for whom pressed.

(2) The owner of every cotton ginning factory shall maintain in such form if any as may be prescribed, a ginning register containing a complete daily record of all the cotton or kapas ginned showing in detail the name of the person or persons for whom ginned and the quantity of cotton or kapas ginned daily.

(3) Ginning and press registers shall be produced for inspection on demand by any person appointed by the Local Government in this behalf. The owner of any cotton pressing factory shall, if required in writing, furnish to the Indian Central Cotton Committee a certified copy of the entry in the press register relating to any specified bale.

(4) The registers required to be maintaind by this section shall not be destroyed until after a period of two years clear from the end of the cotton season to which they refer.

5. (1) The owner of every cotton pressing factory shall submit to the authority appointed by the Local Government for this purpose,

on such dates and in such forms as may be prescribed, a return showing the total number of bales of cotton pressed during the preceding week and the total number of bales pressed during the current season and the approximate nett weight per bale.

(2) The total number of bales pressed in any province or portion of a province during any period may be published in such manner as the Governor General in Council may direct, but the figures relating to any individual factory shall not be disclosed.

6. In all cotton pressing factories and in all cotton ginning factories only correct scales and the certified standard weights which shall be prescribed by the Local Government for the district in which the factory is situated shall be used.

7. (*a*) Within such period from the passing of this Act as may be prescribed, the owner of every pressing factory in which cotton is handled on the ground floor shall cause the press-house to be properly paved, or otherwise provided with suitable flooring to the satisfaction of the prescribed authority.

(*b*) In all cotton ginning factories constructed after this Act comes into force, the following requirements shall be fulfilled :—

(1) Every gin-house shall be provided with separate entrances for kapas and exits for ginned cotton.

(2) The factory shall fulfil such requirements as the prescribed authority may order, and shall be constructed in accordance with plans approved by the prescribed authority.

(*c*) The prescribed authority for the purposes of this Section shall be the Provincial Cotton Committee of the province in which the factory is situated, or if no Provincial Cotton Committee be appointed, the Indian Central Cotton Committee.

8. (1) The Local Government may, by notification in the local official gazette, require all cotton ginning factories or all cotton pressing factories or both if situated in the province or in any prescribed portion of the province, to obtain a license as a condition of working, and when such notification has been issued no cotton ginning factory or cotton pressing factory shall work unless and until a license has been obtained. Such notification shall prescribe the conditions under which licenses may be granted and withdrawn or suspended. In particular

and without prejudice to the generality of the foregoing such notification may provide that licenses shall be refused, cancelled or suspended for any of the following reasons :—

When the owner or manager of the factory—

(*a*) has not complied with the orders of the authority prescribed under Section 7 in regard to structural details,

(*b*) has failed to submit punctually and regularly any return prescribed under this Act or in the case of a pressing factory has failed to cause the bales to be marked in the prescribed manner,

(*c*) in spite of due warning has persisted in using incorrect scales or weights other than the certified standard weights prescribed for the district,

(*d*) has failed to maintain or preserve any prescribed record.

(2) The authority by which licenses shall be granted, suspended, cancelled or withdrawn, shall be the Local Government acting on the advice of the Provincial Cotton Committee, provided that no license shall be ordered to be cancelled or suspended for a period of more than one calendar month unless a reference has been made to the Indian Central Cotton Committee.

(3) The Local Government may, by notification in the local official gazette, prescribe the fees to be paid in consideration of the issue of a license.

(4) No notification under this Section shall be issued by the Local Government unless it has been laid in draft before the Legislative Council of the province and has been approved by a resolution of the Legislative Council either with or without modification or addition, but upon such approval being given, the notification may be issued in the form in which it has been so approved.

9. The Governor General in Council may make rules for the purpose of carrying out this Act. In particular and without prejudice to the generality of the foregoing he may make rules :—

(*a*) for the allotment of marks to pressing factories,

(*b*) for prescribing the manner in which bales shall be marked,

(*c*) for prescribing the method of publication of returns of cotton pressed.

10. The Local Government may make rules consistent with this Act and with rules under Section 9 :—

(*a*) for the appointment of a Provincial Cotton Committee,

(*b*) after consulting the Provincial Cotton Committee,

(1) for prescribing the forms in which records are to be maintained, and for providing for the verification of records and for the inspection of registers,

(2) for prescribing the authority to whom and the forms in which and the dates on which returns under Section 5 (1) shall be made,

(3) for prescribing the period within which and the manner in which press-houses shall be paved or floored,

(4) for prescribing the weights which may be used in cotton ginning and pressing factories in any district in the province, and for providing for the checking of the scales used,

(5) for prescribing the procedure to be observed in regard to the issue and withdrawal of licenses,

(6) such rules may prescribe that any breach of the rules not otherwise punishable under the Act may be punished by fine which may extend to Rs. 100.

11. Within one year from the first day of September next following the passing of this Act it shall be permissible for any person who has made a contract for the purchase of cotton to require that only bales marked in compliance with Section 3 of this Act shall be tenderable in fulfilment of the aforesaid contract and no bale not so marked shall be tenderable in fulfilment of such contract provided that nothing in this section shall apply to a contract for the sale and delivery of cotton grown before or less than one year after the passing of this Act.

Penalties.

12. Any person who contravenes the provisions of this Act shall be liable to fine which may extend :—

(*a*) for an offence against Section 3 to Rs. 50 per bale,

(*b*) for an offence against Section 4 or Section 6 to Rs. 50 for the first offence and to Rs. 500 for any subsequent offence,

(*c*) for an offence against Section 5 to Rs. 100,

(*d*) for an offence against Section 7 to Rs. 50 per day,

(*e*) for an offence against Section 8, *i.e.*; for working without a license to Rs. 100 per day.

13. No suit or other legal proceeding shall be instituted against any person in respect of any thing done which is in good faith done or intended to be done under this Act.

APPENDIX V.

BOMBAY (DISTRICT) COTTON MARKETS BILL.

(DRAFT.)

An Act to provide for the establishment and better regulation of cotton markets.

Whereas it is expedient to establish open markets for the purchase and sale of cotton in the Bombay Presidency including Sind, and to regulate the same, it is hereby enacted as follows:—

1. (1) This Act shall be called the Bombay (District) Cotton Markets Act.

(2) It shall apply to the whole of the Presidency of Bombay including Sind, but excluding the City of Bombay.

2. (1) For the purposes of this Act, a *market* shall mean any fixed meeting place for transactions of purchase and sale of cotton by a number of individuals.

(2) Any person who opens or establishes a place of general resort for purchase, sale or weighment of cotton shall be held to have established a market for the purposes of this Act.

(3) The market shall consist of the "*Market Yard*," the "*Market Proper*" and the "*Market Approaches.*"

The "*Market Yard*" shall mean the enclosure bounded by walls or railings known as the cotton market yard, over which the Committee shall have absolute control, subject to such control as may be vested by law in the Collector of the District, the District or Local Board or Municipal Committee.

The "*Market Proper*" shall include all lands within such radius from the centre of the Market Yard as the Local Government by notification in the *Bombay Government Gazette* may prescribe; in particular it shall include all cotton mills, ginning and pressing factories and their compounds within the notified area. In the "*Market Proper*" the Committee shall exercise such rights only as may be necessary for the more convenient control of the market yard and for the enforcement of the market rules and bye-laws.

The "*Market Approaches*" shall include all lands, the property of the Government or of the Municipality or of the Market Committee or of a District Local Board within such radius of the Market Yard as may be prescribed by the Local Government. In the '*Market Approaches*' subject to any Municipal bye-laws or rules, the Market Committee may exercise control over cotton traffic.

(4) Cotton includes ginned cotton, unginned cotton and cotton waste.

3. (1) At the request of the Divisional Board of Agriculture, or Local Cotton Committee concerned, or after consulting them in the prescribed manner, the Governor in Council may, by notification in the Bombay Gazette, declare that any place, the property of Government or of any Municipality, or of any District or Taluk Board, is a market for the sale of cotton, and may from time to time amend such notification.

(2) Such notification shall prescribe the person or persons, who shall manage or superintend the market, and such person or persons shall for the purposes of this Act, be the Market Committee. Provided that the Market Committee shall consist of not less than 12 nor more than 16 persons of whom fifty per cent. shall be representatives of the cotton growers of the area served by the market, one member may be an official nominated by the Local Government, one member shall be nominated by the Municipal or Local Board (as the case may be) within whose jurisdiction the market is situated, and the remainder shall be elected by the local cotton trade.

4. (1) The Local Government may in respect to any market notified under Section 3 make rules for:—

(*a*) the appointment of the Market Committee;

(*b*) the management of the market, the levy of fees thereon, and (subject to the provisions of the following sections) the collection and disposal of such fees;

(*c*) the issue of licenses to commission agents, brokers, weighmen and measurers using the market, the conditions under which such licenses shall be issued, and the fees to be charged for such licenses;

(*d*) the place or places of weighment and measuring, the description of scales, weights and measures to be used, the periodical inspection, verification and correction of such scales, weights and measures ;

(*e*) the preparation and sanction of plans and estimates for works which are to be constructed partly or wholly at the expense of the Market Committee ;

(*f*) the accounts to be kept by the Market Committee and the manner in which they shall be audited and published ;

(*g*) the preparation and sanction of the budgets of and the submission of reports and returns by the Market Committee ;

(*h*) the disposal of surplus funds in the hands of the Market Committee ;

(*i*) the guidance, generally, of the Market Committee from time to time formed in accordance with Section 3.

(2) All rules under this section shall be published in the *Bombay Gazette* and shall thereupon have the force of law. Any such rules may provide that any contravention thereof or any conditions of a license not otherwise made punishable by this Act shall be punishable with fine which may extend to Rs. 500.

5. The Market Committee may, in respect to the market which they are appointed to manage, with the previous consent of the Director of Agriculture, and consistently with rules made by the Local Government under Section 4, make bye-laws for the management of the market, and, in particular, and without prejudice to the generality of the foregoing for regulating the conditions of trading.

6. The Market Committee, subject to rules made by the Local Government under Section 4, may appoint and employ such officers and servants as may be necessary for the efficient management of the market, and may assign to such officers and servants such salaries as they think fit. Such Committee, in the case of any officer or servant of the Government employed in connection with the market may in addition subscribe for his pension or gratuity and leave allowances in accordance with the regulations of the Government for the time being in force, and in the case of any servant or officer, not being a servant or officer of Government, may provide for the payment of a pension, or gratuity, or leave allowance for such officer or servant, subject, however, to the provision of any rules made by the Local Government under Section 4.

7. All fees collected under rules made under Section 4 of this Act shall be levied at rates calculated so as to meet, as nearly as may be, the expenditure deemed necessary for the purposes hereinafter mentioned, and shall be applied in the first instance to such purposes that is to say—

(*a*) to the maintenance and improvement of the market or bazar in which the fees are levied, its surroundings and approaches;

(*b*) the construction and repair of buildings, platforms, and other erections necessary for the purposes of such market;

(*c*) the health, convenience and safety of the persons using such market;

(*d*) the pay, pensions, gratuities, leave allowances and annuities of any officers or servants employed by the Market Committee.

8. (1) All monies received by a Market Committee shall constitute a fund called the Market Committee Fund, and all expenditure under this Act shall be defrayed out of such fund.

(2) The surplus of receipts over expenditure, if any, shall be utilised in accordance with rules made under Section 4 (*h*) of this Act.

9. No trade allowance other than those prescribed by rule or bye-law made under this Act, under Section 4 or Section 5 shall be recognised in any market or bazar notified in Section 2 and no Civil Court shall in any suit arising from transactions entered into in any such market, have regard to any usage or trade custom or alleged usage or trade custom to the contrary.

10. (1) When the Local Government has, by notification under Section 2, declared any place to be market for the sale of cotton, no new market or bazar shall, except with the sanction in writing of the Local Government and subject to such conditions as the Local Government may think fit to impose, be established for the like purpose within ten miles of the market notified.

(2) Whoever establishes a market in contravention of this Act or violates the conditions under which he is authorised to establish a market under this section shall be punishable with fine which may extend to Rs. 500, and in the case of a continuing breach, with fine which may extend to Rs. 100 for each day after the first during which the breach continues.

11. Fees leviable in pursuance of any rules under this Act may be realised as fines under the orders of a Magistrate.

INDIAN CENTRAL COTTON COMMITTEE.

DRAFT RULES UNDER SECTION 4 OF THE PROPOSED BOMBAY (DISTRICT) COTTON MARKETS ACT.

RULES AS AMENDED IN LOCAL SUB-COMMITTEE ON JULY 16TH, 1923.

Number of corresponding * Berar Rule and remarks on differences.

Rules 1 and 2.

1. Except where otherwise provided by the notification under section 3 of the Act, the Market Committee shall be appointed as follows :—

Appointment of the Market Committee.

We propose to provide for the constitution of the Market Committee in the Act itself: the rules need only deal therefore with the method of appointment.

(*a*) Representatives of the cotton trade shall be elected by the cotton trade electorate as defined in Rule 2.

(*b*) Representatives of cotton growers for a period of two years from the first notification of any market shall be nominated by the Local Government and thereafter shall be elected by the cotton growers of the area served by the market in such manner as may be prescribed.

(*c*) The official member shall be nominated by the Local Government.

(*d*) If the market be situated within Municipal limits a member of the Market Committee shall be nominated by the Municipal Board otherwise a member shall be nominated by the District or Taluqa Local Board as the Local Government may direct.

Rules 2 to 8 replace Berar Rules 3 to 9.

2. The following persons shall form the cotton trade electorate and shall be

* See Indian Cotton Committee Report Appendix VI (pages 178—189 of the foolscap edition).

Number of corresponding Berar Rule and remarks on differences.

qualified to serve on the market commitee :—

(1) Every person who on his own account, or on account of the undivided Hindu family of which he is the Manager, has in the financial year next preceding purchased or sold in the market not less than 100 khandis of ginned cotton or 300 khandis of unginned cotton or the equivalent.

Note.—Khandi is defined in Rule 42.

(2) The principal agent, or, if the principal agent is otherwise disqualified the next senior agent or servant, of every firm or company which has in the year next preceding the year in which the appointment is made, purchased or sold in the market, (as evidenced by the market registers) not less than 500 khandis of ginned cotton or not less than 1,500 khandis of unginned cotton or the equivalent.

(3) A general commission agent who has in the year last preceding the year in which the appointment is made, purchased or sold in the market as evidenced by the market registers, not less than 500 Bombay khandis of ginned cotton or not less than 1,500 Bombay khandis of unginned cotton or the equivalent.

Provided always : that no person shall be eligible who—

(*a*) does not reside within 10 miles of the town or Municipality in which the market is situated ;

(*b*) is a female, is not 21 years of age, is of unsound mind, or is affected with incurable disease ;

(*c*) has been declared an insolvent, or has been convicted of such offence, or has been subjected by a Criminal Court to such order as implies, in the opinion of the District Magistrate, a defect in character which unfits him to serve as a member of the Committee;

(*d*) is a clerk or servant of the Committee, or is a licensed weighman; or

(*e*) has directly or indirectly any share or interest in any contract or employment with or on behalf of, or under, the Committee;

(*f*) being a cotton trader has not registered his name under rule 19.

3. When a market is first notified under section 3 of the Act, the Collector of the district shall cause to be prepared a list of persons who appear to be qualified under rule 2 and these persons shall form the first cotton trade electorate. For elections subsequent to the first the Market Committee shall cause such a list to be prepared from the market registers and shall furnish such list to the Collector of the district. The Collector of the district shall hear and dispose of applications for inclusion in the list of electors and objections to the inclusion of any name or names in that list and his decision shall be final.

4. The Collector of the district shall cause the lists of electors to be published in such manner as may be necessary on the (1st April) in each year and shall fix a date for the election of the Market

Number of corresponding Berar Rule and remarks on differences.

Committee which shall not be later than the (1st August) in each year. The Collector or person duly authorised by him in writing shall make such arrangement as may be necessary for the holding and supervision of the election, for the scrutiny of the ballot and for declaration of the results of the election. The names of the Market Committee including nominated members for the current year shall be published in the *Bombay Government Gazette.*

5. The Market Committee shall come into office on the 1st day of September in each year and shall hold office until 31st August in the following year. A member elected to fill a casual vacancy or members who form the first Market Committee of a newly notified market shall come into office on the date on which his or their name (s) are published in the *Bombay Government Gazette.*

6. If a casual vacancy amongst the elected members in the Market Committee occurs owing to a member having died, resigned or become ineligible for office, the Committee shall appoint a qualified person from the electorate by whom the vacating member was elected to hold office until the end of the year.

The Berar rule provides powers to either supersede the Committee or remove a member.

7. The Local Government may in case of mismanagement supersede a Market Committee and either order a new election or make such arrangement for the carrying out of the functions of the Committee as they may think fit.

Number of corresponding Berar Rule and remarks on differences.

Cf. Berar Rule 10.

8. The Committee shall, so far as the funds at its disposal will permit, but subject to the provisions of these rules, provide (1) for the maintenance and improvement of the market, its surroundings and approaches; (2) for the construction and repair of buildings, *chabutras*, and other erections necessary for the purpose of the market; and (3) for the health, convenience, and safety of the persons using the market.

Note.—Berar rule 11 is unnecessary in view of Section 5 of the Act.

Appointment of Sub-Committee or joint committee, and delegation of duties to members.

9. The Committee may also appoint two or more of its members to be a Sub-Committee or to be a joint committee for the conduct of any work or works or to report on any matter or matters and may delegate to any one or more of its members such of its own powers as may be necessary.

Cf. Berar Rule 13.

Berar Rules 14-33 deal with routine matters not necessary to an understanding of the Bill. These can be drafted later.

10. The Committee shall elect one of their members to be Chairman. He shall conduct all correspondence. All contracts shall be entered into in his name, and the servants of the Committee shall, subject to these rules and to the orders of the Committee, be subject to his control. He shall be responsible for the keeping of accounts, for the punctual rendering of all reports and returns, and for the custody of all monies not deposited in the treasury or with a banker, and shall be the chief executive officer of the Committee.

Number of corresponding Berar Rule and remarks on differences.

Cf. Berar Rule 39.

In Berar the uniform rates are fixed by rule. In Bombay uniform rates are probably impossible.

11. Fees shall be levied in the market at such rates as the Market Committee may fix by rule under Section 5 of the Act :—

Fees to be levied.

(1) on every package of ginned cotton or cotton waste,

(2) on every cart laden with unginned cotton or on every package of unginned cotton.

Same as Berar Rule 40.

12. The fees shall be payable as soon as the cotton is brought into the market but unless there is reason to fear that the duty will be evaded, it shall not be recovered till the cotton is after sale removed from the market yard.

Recovery of fees.

Same as Berar Rule 41.

13. A receipt shall be granted to the payer in respect of every fee collected under these rules, and a register of collections shall be kept.

Receipts to be granted and register of collections to be kept.

Same as Berar Rule 42.

14. The fees shall be collected by paid servants of the Committee, and shall not be farmed out.

Fees to be collected by paid servants.

Same as Berar Rule 43.

15. Every servant employed by the Committee for the collection of fees shall wear a suitable badge of office provided by the Committee.

Servants employed on the collection of fees to wear badges.

Number of corresponding Berar Rule and remarks on differences.

Same as Berar Rule 44.

16. Any person removing or attempting to remove cotton from the market yard before the fee has been paid and the receipt prepared and granted, or practising any device in order to evade or facilitate the evasion of the payment of the fee, shall be liable to a fine not exceeding Rs. 50.

Penalty for evasion of payment of the fees.

Cf. Berar Rules 46 to 48.
The market is defined in Section 2 of the Bombay Bill and the rules much simplified in consequence.

17. The Market Committee shall fix the hours during which the market shall be open for trading. No registered trader shall be excluded from the market during any time when it is open to the public.

Management of the Market.

Same as Berar Rule 49.
See also section 4 (2) of the Bill.

18. Any person entering or attempting to enter the market yard when directed not to do so, or disobeying the directions of the Committee in regard to the places where carts laden with cotton may stand, or in regard to the roads by which and in regard to the times at which, they may proceed, shall be liable on conviction to a penalty not exceeding Rs. 10 for the first offence and Rs. 50 for any subsequent offence.

Penalty for disobedience of orders of Committee.

Cf. Berar Rule 50.
The proposed rules leave the fixing of fees and form of agreement to the Market Committee and an attempt has been made to simplify the rules.

19. Any person shall on application at the office of the Committee be entitled to have his name immediately registered as a cotton trader on his executing an agreement, in such form as the Market Committee may prescribe, agreeing to conform with the market rules and on

Number of corresponding Berar Rule and remarks on differences.

his paying such fee, if any, not exceeding Rs. 50 per annum as may be prescribed by bye-law.

Explanation.—The term 'cotton trader' includes a person buying or selling cotton as a principal or as the duly authorised agent of one or more firms or as a Commission Agent.

This corresponds to Berar Rule 51. The reference to the District Officer has in this case been retained as it appears necessary to provide for an appeal, otherwise the Market Committee might be involved in civil suits.

Removal of name of trader from the register.

20. The Committee may remove from the register the name of any person registered as a trader who violates the conditions of his agreement either permanently or for a fixed period not exceeding three months. In the event of there being a dispute as to whether the conditions of the agreement have been violated or not, the matter shall, after all the evidence on both sides has been recorded by the Chairman, be referred to the Collector of the district for decision. The Collector shall decide the question on a perusal of the papers either after hearing or without hearing the parties and his decision on that point shall be final. On the application of the Chairman, the Collector may depute any other officer to record the evidence. In the event of the Committee removing the name of any person permanently, the confirmation of the Collector shall be necessary.

Cf. Berar Rule 52.

21. No registered trader shall weigh for delivery any cotton purchased or sold by him with any scales except authorized scales, or with any weights or chains

Number of corresponding Berar Rule and remarks on differences.

except authorised weights and chains, and any registered trader evading or attempting to evade this rule shall be held to have violated the conditions of his agreement.

22. The Committee shall license such and so many persons as may from time to time appear proper to be licensed brokers and to be licensed weighmen, and the Committee may at any time withdraw any license granted by it.

Cf. Berar Rule 53.

Provided that no private servant shall be licensed as a broker or as a weighman, and that a licensed broker or weighman taking service shall *ipso facto* cease to be licensed. No unlicensed broker or weighman shall practise in the market.

Cf. Berar Rule 54.

23. Licenses shall remain in force for one year only, but may be renewed, and shall be issued and renewed on the payment of such fees as the Committee may prescribe by bye-law under section 5 of the Act.

Cf. Berar Rule 56.
(Berar Rule 55 does not seem necessary.)

24. No person shall in the absence of express agreement be bound to employ a broker in any transaction or be required to pay for a broker employed by any other party to the transaction or to pay for a broker when none is employed.

Cf. Berar Rule 57.
(It is proposed that the fixing of fees be left to the Market Committee.)

25. A licensed broker or weighman may demand on account of his services when employed from the person employing him such fees as may be fixed by the bye-laws of the market.

Cf. Berar Rule 59.

26. If both parties employ the same licensed broker or weighman, the fees of

Number of corresponding Berar Rule and remarks on differences.

the broker or weighman shall, in the absence of express agreement, be payable half by the buyer and half by the seller.

As in Berar Rule 60.

27. Every licensed weighman when plying his trade shall wear a distinguishing badge of a suitable pattern to be provided by the Committee.

Licensed weighman to wear a badge.

As in Berar Rule 61.

28. Any person practising in the market as a broker or a weighman without a license or any weighman plying his trade without a badge shall be liable on conviction to a fine not exceeding Rs. 50.

Penalties for plying trade without license or badge.

Cf. Berar Rule 62

29. Servants and agents employed to purchase or sell or to bargain for cotton on account of others, whether remunerated by fees or not, are not brokers within the meaning of the term as used in these rules, provided that they are employed by one person or by one firm only, and that they do not obtain or demand fees from any other person except the one person or firm that employs them. No buyer or seller or his servant or servants may solicit or receive any fees for brokerage or weighing charges on penalty of removal from the market register.

Differs from Berar Rule 63 which appears inconsistent with the objects in view.

30. All weighments in the market shall be carried out by licensed weighmen.

Number of corresponding Berar Rule and remarks on differences.

As in Berar Rule 65.

Penalties to licensed broker or weighman for demanding or receiving any sum not authorized by these rules.

31. Any licensed broker or any licensed weighman who shall demand, receive or retain, or shall allow any other person to demand, receive or retain, on account of, or under the colour of, fees due in respect of his service, any sum not demandable under these rules or a larger sum than is demandable under these rules, or from a person who is not liable to pay under these rules, and any person who, not being a licensed broker or weighman, shall demand, receive or retain, or facilitate the demanding, receiving or retaining of such sums, shall be liable on conviction to a fine not exceeding Rs. 50.

Corresponds to Berar Rule 66.

32. Every broker and every weighman licensed under these rules shall keep such books in such form and render such daily and monthly returns at such a time and such form as the Committee shall from time to time prescribe, and shall render such assistance in the collection of dues and in the prevention of the evasion of duty and breach of the rules as may be required by the Committee.

Berar Rules 67, 67A and 68 provide for standard weights. It does not seem possible to standardize weights for the Bombay Presidency at present and the alternative is to provide for weights being fixed by bye-law.

33. Only those weights prescribed by bye-law under section 5 of the Act shall be used for the weighment of cotton in the market. All other weights shall be unauthorised.

Number of corresponding Berar Rule and remarks on differences.

As in Berar Rule 69.

34. The Chairman, every member of the Committee, and every employee of the Committee authorized by the Committee in this behalf shall be entitled at any time and without notice, to inspect, examine, and test any scale or weight used, kept, or possessed in any open place within the limits of the market.

Inspection of scales and weights.

As in Berar Rule 70.

35. Every registered trader, and every trader in cotton residing or trading within the limits of the market shall on a requisition in writing being made to him by the Chairman or by any two members of the Committee, immediately produce for examination all and every such scale and weight used, kept or possessed by him, or by any person or persons under his authority or control, and shall, allow the said Chairman or the said two members to inspect, examine and test the same.

Production of scales and weights for inspection.

As in Berar Rule 71.

36. If any scale be found on examination to be untrue or any weight found on examination to be unauthorized or incorrect a report shall be forthwith forwarded in such form as the Collector may from time to time prescribe to such Magistrate as the Collector may from time to time appoint, and the Magistrate shall order the confiscation and destruction of such scales or weights, or make such other order in the matter, as may appear proper.

Confiscation of incorrect scales and weights authorized.

Number of corresponding Berar Rule and remarks on differences.

As in Berar Rule 72.

Penalties for disobedience of order to produce any weight or scale for examination.

37. Whoever being bound under the provisions of rule 35 to produce any scale or weight for examination, or to allow the examination, inspection, or testing of any scale or weight does not produce the scale or weight, or does not allow the examination, inspection, or testing of the scale or weight shall be liable on conviction to a fine not exceeding Rs. 50.

As in Berar Rule 73.

Penalties for possessing or using incorrect scale or weight.

38. Whoever being a licensed broker or a licensed weighman or a trader in cotton, shall have in his possession, keep, or use any scale or weight which is false, incorrect or unauthorised, shall be liable on conviction to a fine not exceeding Rs. 50.

As in Berar Rule 74.

Conviction not to bar prosecution under other laws.

39. A conviction under rules 37 and 38 shall not bar a prosecution under the Indian Penal Code or under any other law by which the offender may be liable to punishment in respect of the same.

Cf. Berar Rule 76.

The difference is due to the fact that instead of trying to define illegitimate allowances in the Bill we have left it to the Market Committee to prescribe by bye-law what allowances are authorised.

Trade allowances.

40. No licensed broker, licensed weighman or trader (whether registered or not) shall be allowed to demand, take or retain any unauthorised trade allowance or any unpaid-for sample in regard to any cotton transaction entered into in the market, and any person demanding, taking

Number of corresponding Berar Rule and remarks on differences.

or retaining such allowance or unpaid for sample, or assisting or abetting any other person in demanding, taking or retaining such trade allowance or unpaid for sample or in any way facilitating or conniving at the demanding, taking or retaining of such trade allowance or unpaid-for sample, shall be liable on conviction to a fine not exceeding Rs. 50 for each offence.

Explanation.—An unauthorised trade allowance is any trade allowance not prescribed by rule under the Act.

As in Berar Rule 77.

41. A sample which it is intended to pay for on weighment is not an unpaid-for sample. The question whether it is intended to pay for it on weighment or not is a question of fact to be decided by the Magistrate.

Samples.

Cf. Berar Rule 78.

42. In these rules a khandi means 784 lbs. avoirdupois of unginned cotton or ginned cotton.

As in Berar Rule 79.

43. The Committee shall keep at least one set of authorised weights which shall be at all times available to the public for comparison with their own weights at all reasonable hours.

A set of authorised weights to be kept by the Committee.

As in Berar Rule 80.

44. No prosecution shall be instituted for any breach of any of these rules without the previous sanction of the Committee or of the Chairman or other officer authorised by the Committee in

Prosecution not to be instituted without previous sanction.

this behalf. No prosecution shall be instituted against a registered trader, until he has been given an opportunity of explaining his conduct and then only under the special orders of the Committee passed at a special meeting of which notice shall be given to all members, provided always that a prosecution for any offence under these rules may be instituted by the Collector of the District.

APPENDIX VI.

LIST OF COTTON CENTRES PROPOSED.

BOMBAY.

KHANDESH DISTRICT.

	Estimated arrivals. Bales.
Dhulia	about 94,000
Shirpur	„ 10,000
Jalgaon	„ 24,000
Pachora	„ 26,000
Shendurni	„ 18,000
Jamner	„ 12,000
Maheji	„ 12,000
Faizpur	„ 23,000
Chopda	„ 15,000
Amalner	„ 35,000
Bhusaval.	
Chalisgaon.	
Dharangaon.	

BROACH DISTRICT.

Ankleshwar	about 30,000
Jhagadia	„ 20,000
Broach	„ 58,000
Palej	„ 51,000
Miyagaon	„ 12,000
Itola	„ 15,000
Samlaya	„ 25,000
Jambusar	„ 11,000
Dabhoi	„ 40,000
Bodeli	„ 10,000
Bhadarpur	„ 12,000

		Bales.
Navsari	about	22,000
Surat	„	20,000
Kim	„	10,000
Bardoli	„	20,000
Ahmedabad.		
Viramgaon.		

KUMPTA-DHARWAR DISTRICT.

Hubli	about	63,000
Gadag	„	12,000
Bailhongal	„	11,000
Miraj.		
Ranibennur.		

BAGALKOTE-BIJAPUR DISTRICT.

Bagalkote	about	12,000
Ahmednagar.		
Barsi Town.		
Bijapur.		

SIND.

Karachi.
Mirpurkhas.
Adam Tando.
Hyderabad.
Nawabshah.
Shahdadpur.

KATHIAWAD.

Wadhwan.
Rajkot.
Dhoraji.
Porebunder.
Amreli.
Mahuva.
Bhownagar.
Anjar (Cutch).

United Provinces.

Name.	Estimated arrivals. Bales.
Etawah	9,000
Khurja	18,000
Hathras	..
Aligarh	7,500
Chandausi	5,000
Muttra	10,000
Saharanpur	8,000
Cawnpore.	
Bhind.	
Agra.	

Madras.

Tiruppur.
Virudupatti.
Adoni.

Punjab.

	Estimated arrivals. Bales.		Bales.	
Lyallpur	19,600	American,	12,200	*Desi.*
Chakjumra	12,100	,,	3,000	,,
Jarranwalla	15,000	,,	1,700	,,
Tandlianwalla	9,000	,,	3,000	,,
Okara	22,600	,,	4,900	,,
Sargodha	13,670	,,	7,125	,,
Chichawatni	12,200	,,	4,300	,,
Amritsar.				
Montgomery.				
Multan.				
Sialkot.				
Pattoki.				
Mian Channu.				
Ambala.				
Kasur.				

APPENDIX VII (*a*).

NOTIFICATION.

NAGPUR, *the 11th August*, 1922.

No. 1866-873-VIII.—In exercise of the powers conferred by Section 105, Sub-section (3), of the Central Provinces Municipal Act, 1903 (XVI of 1903), the Local Government is pleased to confirm the following by-laws made by the Municipal Committee of Khandwa, in the Nimar District, under Section 105, Sub-section (1), clause (*b*), and Section 105, Sub-section (2), of the said Act, for inspecting and regulating the use of the Khandwa Cotton Market, and for charging fees for the use thereof.

BY-LAWS.

1. There shall be in the town of Khandwa a public market to be called the "Khandwa Municipal Cotton Market" where dealings in cotton will be conducted.

NOTE.—Cotton in the following rules means and includes both ginned and unginned cotton except where it is expressly denoted otherwise.

2. The boundaries of the Khandwa Municipal Cotton Market shall be as follows :—

North.—Bombay Bazar road.

West.—The old Bombay road.

South.—The row of houses commencing from the house of Badal Mistry.

East.—The row of houses on the Distillery road.

3. Every person bringing cotton for sale into the aforesaid market shall, on entering the market, pay the dues at the following rates :—

1. On every cart laden with unginned cotton (Kapas) Anna 1.
2. On every cart laden with ginned cotton (Rui) Anna 1.
3. On every animal laden with unginned cotton (Kapas) Pies 6.
4. On every animal laden with ginned cotton (Rui) Pies 6.

4. Any person removing or attempting to remove cotton from the market before the fee has been paid and the receipt granted or practising any device in order to evade or facilitate the evasion of the payment of the dues shall be liable to a fine not exceeding Rs. 50.

5. Subject to the general control of the Municipal Committee, the Khandwa Municipal Cotton Market shall be under the management of a Sub-Committee consisting of nine members, of whom two shall be elected by the Municipal Committee from amongst their members, two by the District Council from amongst their members, two by registered local dealers in Kapas, one by registered Kapas Adtyas, one by foreign buyers dealing in Kapas and cotton and one shall be nominated by the Deputy Commissioner.

6. Subject to the approval of the Municipal Committee, the Sub-Committee shall appoint its own President.

7. The term of office of the Sub-Committee shall be three years commencing from 1st April.

8. The following powers shall be exercised and the following duties performed by the Cotton Market Sub-Committee :—

(*a*) to regulate and control the management of the cotton market yard ;

(*b*) to supervise the realisation of fees for the use of the cotton market yard, buildings and weighing machine ;

(*c*) to supervise the scale (Takas) and other standard weights used by dealers in cotton ;

(*d*) to register names of all buyers and the places where they will weigh their cotton ; and

(*e*) to advise the Committee on all matters connected with—

(1) issue of licenses under Section 99 (1) (*f*) of the Central Provinces Municipal Act, for the use of any place within Municipal limits as a yard or depôt for trade in cotton ;

(2) issue of orders to any person not to do, or not to omit to do, within the limits of the Khandwa Municipal Cotton Market, anything the doing of, or the omission to do, which is a public nuisance under the Indian Penal Code, *vide* Section 106 of the Municipal Act ; and

(3) issue of conditional orders of the nature referred to in Section 133 of the Code of Criminal Procedure, 1898, in respect of all or any acts of omission within the limits of the Municipal Cotton Market, punishable under these rules [*vide* Section 107 (1)].

9. Any person shall, on application at the office of the Sub-Committee, be entitled to have his name registered as a regular buyer or as a regular seller or as a regular buyer and seller on his executing an agreement in such form as the Committee may, with the previous approval of the Deputy Commissioner, from time to time, prescribe, agreeing to conform to the market by-laws and on his paying a fee of Rs. 10 annually in the month of April in each year.

10. The Committee may strike off from the register the name of any person who has been guilty of a breach of these by-laws.

11. All registered buyers shall have their scales and weights or weighing machines and the places where they are to be set up for the purpose of weighment registered in a book kept for the purpose.

12. Such places shall be opened between sunrise and sunset for inspection by the President, any member of the Committee or of the Cotton Market Sub-Committee or any servant of the Committee who has been duly empowered by the Committee in this behalf.

13. The Khandwa Municipal Cotton Market shall be kept open from sunrise to sunset every day except on Sundays, and all transactions in cotton will be conducted within these hours. No carts laden with cotton shall be taken out of the market until the rate for the day is announced and the bargain is struck. Carts shall be allowed to remain within the market at all hours of the day and night.

14. There shall be a moharrir appointed for the market whose duty shall be to do all business connected with the market on behalf of the Municipality.

15. The sellers are bound to expose for sale separately the different kinds of cotton.

NOTE or ILLUSTRATION.—Cotton damaged by rain is locally known as Kalipatti Kapas and cotton not so damaged as Lalpatti Kapas. A seller is forbidden to bring Lalpatti Kapas in the same cart as Kalipatti Kapas unless he separates them by a cotton sheet or by a matting or otherwise. Rosia cotton should be similarly separated from other varieties.

16. The price of cotton brought into the market for sale will be by open bid and not by any secret signs.

17. No deduction in kind or price from the cotton purchased shall be demanded or received by the purchaser, Adtya or Dalal on account of charity, gratuity or on any other plea.

18. No unregistered person shall enter the market for transacting any business on behalf of any person other than himself.

19. No Dalal or Adtya or buyer shall demand cotton from a cotton cart by way of free sample more than a man can hold in one hand.

20. Every purchaser shall sign an agreement in the subjoined form in favour of a seller before removing from the cotton market any cotton that has been purchased. Printed forms of agreements shall be supplied to the purchaser free of cost by the moharrir in charge—

FORM.

Name of seller

Name of buyer

Rate per mani

Signature of Moharrir.

I do hereby promise that if when your cotton comes to be unloaded, the cotton is found to be worse than the sample, and if I refuse to take it at the price agreed upon, I will within three hours have your cart reloaded at my expense so that you may take your cotton back to the cotton market for sale.

Signature of Purchaser.

21. No person shall enter or attempt to enter the market when directed not to do so by the Cotton Market Sub-Committee, or disobey the directions of that Sub-Committee in regard to the places where carts laden with cotton may stand.

22. Complaints regarding any matter connected with the cotton transactions in the market must be made in writing to the President,

Cotton Market Sub-Committee, and the decision of the President shall be subject to the approval of the Sub-Committee.

23. All orders of the President or Sub-Committee shall be appealable to the Municipal Committee.

24. The Municipality will erect a weigh bridge in the cotton market, and any person may at his option have his goods weighed on it on payment of the following fees :—

For a loaded cart	..Anna 1
For a loaded animal	..Pies 6

The fees shall be paid to such person as may be appointed by the Municipal Committee who shall give a receipt for the amount paid.

25. Breach of any of the foregoing by-laws for which no special penalty has been provided in the rules shall be punishable with fine which may extend to Rs. 50.

By order of Government

(Ministry of Local Self-Government),

A. E. MATHIAS,

Secretary to Government, Central Provinces.

APPENDIX VII (*b*).

NOTIFICATION.

NAGPUR, *the 7th September* 1923.

No. 2116-1104-VIII.—In exercise of the powers conferred by Section 178, Sub-sections (3) and (5), of the Central Provinces Municipalities Act, 1922 (C. P. Act 11 of 1922), the Local Government is pleased to confirm the following by-laws made by the Municipal Committee of Burhanpur in the Nimar District, under Section 179, Sub-section (1), clause (*b*), and Section 70, Sub-section (2), of the said Act, for the inspection and regulation of the Burhanpur Cotton and Grain Market within the limits of the Burhanpur Municipality, and for the charge of fees for the use thereof, in supersession of the by-laws sanctioned in Central Provinces Gazette Notification No. 389, dated the 21st August 1906, as subsequently amended :—

BY-LAWS.

1. There shall be in the town of Burhanpur a public market to be called the Burhanpur Municipal Cotton and Grain Market, where dealings in cotton and grain shall be conducted. It will be referred to as "The Burhanpur Cotton and Grain Market" in these by-laws.

NOTE.—Cotton in the following by-laws means and includes both ginned andunginned cotton except where it is expressly stated otherwise.

2. The Burhanpur Cotton and Grain Market shall be held inside the Akberi Sarai.

3. Persons who buy or wish to buy in the Burhanpur Cotton and Grain Market shall have their names registered annually in a book kept for the purpose on payment of a fee of Rs. 5 before they commence to buy in the Burhanpur Cotton and Grain Market. All registered buyers or their brokers shall have their scales and weights or weighing machines and the places where they are set up for the purpose of weighment registered in the aforesaid book. The Committee may strike off from the register the name of any person who has been guilty of a breach of these by-laws after two warnings. A buyer registered under this by-law may nominate, at the time of his registration, his agents not more than three in number to transact business on his behalf in the market. The names of these agents will be entered in the register.

4. Such places shall be open between sunrise and sunset for inspection of the scales and weights or weighing machines by the President, any member of the Committee or of the Burhanpur Cotton and Grain Market Sub-Committee or any servant of the Committee who has been duly empowered by the Committee in this behalf.

5. Every person bringing cotton and grain to the Burhanpur Cotton and Grain Market for sale shall pay dues at the following rates :—

(*a*) Rui or ginned cotton.

Each cart-load ..	..One anna	Only in case the rui is sold.
Each animal-load ..	..Six pies	
Head-load ..	..Three pies	

(*b*) Unginned cotton and grain.

	Unginned cotton.	Grain.
	Rs. a. p.	Rs. a. p.
Each cart-load.. ..	.. 0 2 0	0 2 0
Each animal-load ..	.. 0 1 0	0 1 0

6. The Municipality will erect a weigh bridge in the Burhanpur Cotton and Grain Market and any person may at his option have his goods weighed on it on payment of the following fees :—

For a loaded cart ..Six pies.
For a loaded animal .Three pies.

The fees shall be paid to such person as may be appointed by the Municipal Committee, who shall give a receipt for the amount paid, and a certificate of the weight and shall also, if required, enter on the certificate particulars of sale of the goods in question. In the case of carts for which the above fees have been paid, empty carts will be weighed free of charge.

7. There shall be entertained such establishment by the Cotton and Grain Market Sub-Committee, with the sanction of the Municipal Committee, as may be necessary for the management of the said market.

8. The price of cotton and grain brought to the Burhanpur Cotton and Grain Market for sale will be decided by open bid and not by any secret sign.

9. Subject to the general control of the Municipal Committee the Burhanpur Cotton and Grain Market shall be under the management of a Sub-Committee consisting of six members, of whom three shall be elected every third year by buyers (registered under By-law 3) subject to the confirmation by the Municipal Committee and three shall be nominated by the Municipal Committee.

10. Subject to the approval of the Municipal Committee the Sub-Committee shall appoint its own President.

11. The term of office of the Sub-Committee shall be three years commencing from 1st April.

12. The following powers shall be exercised and the following duties performed by the Burhanpur Cotton and Grain Market Sub-Committee :—

(*a*) to regulate and control the management of the Burhanpur Cotton and Grain Market yard ;

(*b*) to supervise the realization of fees for the use of the Burhanpur Cotton and Grain Market yard, building and weighing machine ;

(*c*) to supervise the tak and other standard weights used by dealers in cotton and grain ;

(*d*) to register names of all buyers and their agents and the places where they will weigh their cotton and grain ; and

(*e*) to advise the Committee on all matters connected with—

(1) issue of licenses under Section 133 (1) (*f*) of the Central Provinces Municipalities Act, 1922, for the use of any place within Municipal limits as a yard or depôt for trade in cotton;

(2) issue of orders to any person not to do or not to omit to do within the limits of the Burhanpur Cotton and Grain Market, anything the doing of or the omissions to do which is a public nuisance under the Indian Penal Code (*vide* Section 117 of the Municipal Act) ; and

(3) the issue of conditional orders of the nature referred to in Section 133 of the Criminal Procedure Code, 1898, in respect of all or any acts of omissions within the limits of the Burhanpur Cotton and Grain Market punishable under these rules, *vide* Section 220.

13. No one shall be allowed to transact business in the Burhanpur Cotton and Grain Market unless he is a registered buyer and wants to transact business for himself or is a duly registered agent and offers to transact business for his master by whom he has been nominated under Bylaw 3 above.

14. No dalal, adatiya or buyer shall demand cotton from a cotton cart by way of free sample more than a man can hold in one hand.

15. All buyers and brokers shall, before the cotton and grain carts leave the Burhanpur Cotton and Grain Market have the sale transactions entered by the market moharrir in a book kept for the purpose. If any cotton and grain is taken direct to a "Tak" or weighing machine by a seller the broker in charge must have the sale registered previous to weighment and failure on his part or on that of any of his servants shall render his license liable to be cancelled.

16. Every buyer shall sign an agreement in the subjoined form in favour of seller before removing from the Burhanpur Cotton and Grain Market any cotton that has been purchased; printed forms of agreements shall be supplied to the purchaser free of cost by the moharrir in charge.

FORM.

Name of seller

Name of buyer

Rate per pulla

Signature of Moharrir.

I do hereby promise that, if when your cotton comes to be unloaded the cotton is found to be worse than the sample, and, if I refuse to take it at the price agreed upon, I will within three hours have your carts reloaded at my expense so that you may take your cotton back to the Burhanpur Cotton and Grain Market for sale.

Signature of purchaser,

17. No person shall enter or attempt to enter in the Burhanpur Cotton and Grain Market when directed not to do so by, or disobey the directions of the Sub-Committee in regard to the places where carts laden with cotton and grain may stand.

18. No deduction in kind or price from the cotton and grain purchased shall be demanded or received by the purchaser, adatiya or dalal on account of charity, gratuity, or on any other plea except in cases where the quality of cotton or grain is inferior to the sample and both the parties agree to the reduction.

19. The Burhanpur Cotton and Grain Market shall be kept open for transaction of business from 8 a.m. to 1 p.m. except on Sundays and the following holidays, but carts and animals shall be allowed to remain in all hours of day and night in the market :—

1 Dewali.
3 Christmas holidays, 25th, 26th and 27th.
1 Holi.
1 Moharram.
1 Tilsankrant.
1 Sheoratri.
2 Ids.
1 Dasera.

20. Breach or any of the foregoing by-laws for which no special penalty has been prescribed in the by-laws shall be punishable with a fine which may extend to Rs. 50.

By order of Government

(Ministry of Local Self-Government),

A. McDONALD,

Secretary to Government, Central Provinces.

APPENDIX VIII.

PUNJAB-AMERICAN COTTON.

Abstract of Discussion.

The Committee took into consideration (1) letter from the Director of Agriculture, (2) telegram and letter from the Lower Bari Doab Colony Agricultural Association, (3) Resolution of the Punjab Provincial Cotton Committee, (4) Proceedings of the meeting of cotton ginners and traders with officers of the Agricultural Department at Lyallpur.

The following resolution was moved by Mr. Grantham and seconded by Sir Purshotamdas Thakurdas :—

After considering the reply of the Director of Agriculture, the proceedings of the Lower Bari Doab Canal Colony Agricultural Association, the meeting of the Agricultural Department Officers, Cotton Ginners and Traders at Lyallpur and the proceedings of the first meeting of the Punjab Provincial Cotton Committee, the Central Cotton Committee is of opinion that the licensing of gins and presses in the Punjab is an essential step towards stopping the loss to the cotton grower and the general economic loss to the Province caused by the present mixing of Deshi and Punjab-American Cotton.

Mr. Roberts moved the following amendment :—

" That while the licensing of gins and presses is probably an essential step towards stopping the eventual loss to the cotton grower, the Committee is not prepared to recommend that this be done, until experience has been gained of the working of the legislation proposed for the marking of bales, etc., for the rest of India."

Seconded by Mr. Kulkarni.

The amendment was lost by 12 votes to 5.

The Resolution was carried by 15 votes to 4.

The following points were clearly brought out in discussion :—

(1) That an immediate remedy was necessary in view of the increasing export of Punjab-American Cotton and its importance to Indian mills ; on the other hand, mixing is on the increase and the reputation of the whole crop is threatened.

(2) Desi and American cottons are likely to continue to grow side by side and no remedy through the application of the Cotton Transport Act is possible. On the other hand, mixing by growers is at present unimportant and the majority of mixing takes place in the ginning factories. If mixing in factories continues on the present scale, however, it is possible that mixing by growers will increase.

(3) The mixing of kapas in ginning factories is responsible for mixed seed being issued to growers. It is true that there are other means of dealing with the seed problem as there are large estates capable of supplying the whole of the pure seed required for the province. On the other hand experience, both in the Punjab and in Madras, shows that when mixing takes place in ginning factories mixed seed is sown despite the provision of seed depots for the supply of pure seed.

(4) The Provincial Cotton Committee considered that Mr. Milne's proposal, *viz.*, that steps should be taken to provide a testing-house and that American cotton should be sold on a guarantee of quality, should be further investigated. The principal difficulty about this proposal is that it does not offer an immediate remedy and, further, neither cultivators nor middlemen can afford to hold stocks.

(5) The meeting of Lyallpur ginners and traders had stated that they would welcome any measure which would effectively check the mixing of Punjab-American and Desi cottons, but they were opposed to the licensing of gins and presses. They considered that the remedy lay with the purchaser. As was shown at the last meeting pure Punjab-American cotton of known marks fetches high prices in Bombay and there is now no difficulty in getting, either from exporters or mills, full prices for first class cotton. The complaint that purchasers took cotton which they knew to be mixed was considered to be not altogether fairly stated, as in many cases in taking cotton containing 5 or 10 per cent. Desi they were taking the best cotton available. It was also explained that exporters who buy up-country have to compete with mixed cotton sent to Bombay for sale by up-country ginners and sold there to exporting firms.

One of the reasons which led to the Central Cotton Committee to decide not to recommend compulsory licensing of gins and presses throughout India was that in many parts of the country owners gin

and press entirely on contract and have no financial interest in the cotton. In the Punjab, as in parts of Madras, the contrary is the case. Ginning and press owners are also traders in cotton and this being so there appears to be no obejction to action to prevent an abuse which is causing serious loss to the Punjab cotton growers. It was also explained that in the event of licensing being introduced any ginning factory owner who works on contract could protect himself against any loss through the malpractices of his clients by the insertion of a suitable clause in the ginning contract.

Mr. Milne explained in detail his scheme for sale of cotton on a guaranteed quality.

The President moved the following resolution and explained that it summarised the recommendations of the Board of Agriculture in 1919 :—

Mr. Milne's proposals for selling Punjab-American cotton on the basis of tests for staple length, percentage of dirt. stained cotton and moisture should be investigated as soon as the equipment of the Committee's experimental spinning plant and laboratory is sufficiently complete. Progress along these lines will necessarily be gradual and the Committee do not consider that action to stop the present abuses should be delayed until results of these investigations are available.

The resolution was seconded by the Hon'ble Mr. Lalubhai Samaldas and carried unanimously.

Copy of a letter No. 664-C., dated the 23rd July 1923, from D. Milne, Esq., Director of Agriculture, Punjab, to the Secretary, Indian Central Cotton Committee, Bombay.

In continuation of my predecessor's letter No. 19/63-644, dated the 16th May 1923, I have the honour to say that there is no objection whatever to your publishing the reference from the Lower Bari Doab Colony Agricultural Association mentioned in your letter No. B/333 of 1923, dated 11th May 1923. Mr. F. H. Puckle, I. C. S., Colonization

Officer, Lower Bari Doab Colony, Montgomery, is the President of that Association and communications on the meeting in question should be addressed to him.

2. I do not think that licensing of gins is the real remedy for mixing Desi and American cottons. The matter is very important however and there is no harm in putting the subject before a strong committee such as that suggested in my predecessor's letter No. 103/63-452 IV, dated the 12th May 1923 to Government, a copy of which was forwarded to you with his D. O. No. 2485, dated the 15th May 1923.

Is it proposed to send inspectors round to look out for mixing of cottons ? If so, I think, this will be a failure. If not, are licenses to be withdrawn only when there is an accumulation of complaints by buyers against a particular factory ? In that case there will be few or no complaints from buyers during a year of rising market prices even if considerable mixing takes place. In other words, so long as the buyer can sell the inferior mixed stuff at a profit on his buying bill, he will not be likely to make complaints ; but the character of Punjab cottons in the world's markets will suffer when these mixed cottons arrive there or at the mills, and that will affect the prices that farmers will get for following consignments. The losses eventually come out of the farmers' pockets, for the spinner is determined not to pay for a better quality than he thinks he will get, and the middleman will certainly not pay the farmer more than he gets from the spinner.

3. Would licensing of gins have stopped mixing last year, for example ? I hardly think so. If what one hears is true, then mixing went on at most ginneries. There were huge fortunes to be made by mixing Desi and American cottons last year and the ginner, who did not mix cottons, did not make all the profit he could have made. The reason that mixing was excessively practised last year seems to be that the price of cotton generally rose throughout the cotton selling season and buyers were not as particular about receiving the qualities purchased as they would have been, had the market been a falling one. The result, however, is that the spinners could not have got the quality of cottons grown by the farmers and the reputation of the Punjab cottons must have suffered greatly. There were 365,000 acres of American cotton grown in the province last year and the quality in general was excellent, but mixing was extremely common, therefore, the loss to both spinners and farmers must have been immense.

4. Again I have frequently brought to notice the fact that pure types of American cotton grown on soils having insufficiency of water for the needs of the plants in the fruiting season yield a quality of fibre which can only be described as trash (see my evidence to the Indian Cotton Committee of 1918) and when this is mixed with well grown cotton of the same variety, the grower is usally accused of having mixed his American cotton with Desi. The effect of mixing this trashy lint with good lint from the same variety of cotton is just as harmful from the spinner's point of view, or more so, than the mixing of Desis and American cottons. Will the licensing of gins stop this? I fear, not. Mixing of superior with inferior qualities of American cotton or Desi with American will only stop, when it ceases to be a paying concern and that could only be done by selling cottons on basis of purity and quality.

5. I have explained the necessity for this in my note which was written by me as Economic Botanist, and forwarded to the Director of Agriculture, Punjab, with my letter, dated the 21st February 1921 and I need not dilate on it here. I may say however that much would be achieved even if we did not go to the length outlined in that letter but had a test which merely shows such points as percentage of fibre below a certain length (say 0·9″ staple) and percentages of dirt, stained cotton and moisture. To this could be added tests of strength, etc., as facilities offered. I would suggest that the means of arranging such tests should be thoroughly investigated and that experiments with this system of trading might first be attempted on a small scale without legislation by the Indian Central Cotton Committee in co-operation with some such body as the Zemindara Co-operative Association, Okara, in Montgomery district. It seems to me probable that if the system was once started, it might take on without legislation just as the similar system of selling wheats on a basis of purity, has done. If we can avoid legislation, it would be a great achievement.

6. As will be seen from the above, what we want is not only the stoppage of mixing of cottons but an incentive to farmers to grow more and better cotton, and to keep their grades separate. The method I have outlined brings in the strongest driving force in the world—self-interest—to help us in this instead of hindering us as it is doing at present and, in my opinion, this is the proper method of tackling the question.

Copy of a letter No. 1520, *dated the 7th September* 1923, *from F.H. Puckle, Esq., I.C.S., Colonization Officer and President, Lower Bari Doab Colony Agricultural Association, Montgomery, to the Secretary, Indian Central Cotton Committee, Bombay.*

I have the honour to confirm my telegram, dated the 4th September 1923 :—

> " Lower Bari Doab Colony Agricultural Association supports proposed licensing policy, thinks pressure put on ginners and pressers will be passed on and eventually reach producers, favours guaranteed premiun for pure American since last year it certainly paid ginners and pressers to mix."

2. The Association is of the opinion that while undoubtedly a great deal of deliberate mixing goes on in the ginning and pressing factories a great deal of *kapas* reaches the factories hopelessly mixed either by village Banias involuntarily or deliberately by middlemen in the Mandis. We think however that except by encouraging in every possible way the use of pure seed nothing can be done by legislation until the kapas reaches the factories. We therefore approve of the proposed legislation since we consider that if pressure is put on the factory owners, they will in time refuse to deal with middlemen who supply badly mixed kapas. The pressure will eventually reach the village *bania* and the producer.

3. But on the other hand we realise that the blame does not rest entirely on the ginner or presser. Frequently it pays him just as well (and of course it is much less trouble) to mix his cotton. We think that it should be possible once marking and numbering of bales is enforced to secure that pure American gains sufficient premium in the big markets to make it financially unprofitable to offer mixed cotton.

4. The Association does not consider it necessary to start cotton auctions again. It is, we believe, now possible for any Zamindar who so desires to get pure seed. We are strongly in favour of the encouragement of co-operative marketing and seed societies but we realise that the existing economic conditions in which the village *bania* often controls the entire crop of the village will make progress very slow.

The first meeting of the Punjab Provincial Cotton Committee was held at Lahore in the office of the Director of Agriculture, Punjab, on 20th August 1923, at 11 a.m.

The following members were present:—

D. Milne, Esquire, B.Sc. (Agri.), I.A.S., Offg: Director of Agriculture, Punjab.

H. R. Stewart, Esquire, I.A.S., Professor Agriculture Punjab Agricultural College, Lyallpur.

Agha Yusaf Ali, Offg: Economic Botanist to Govt., Punjab Lyallpur.

R. B. L. Sewak Ram, M.L.C., of Gangapur.

The Hon'ble R.B. Lieut. Lal Chand, O.B.E., of Rohtak.

* * * * *

(2) Measures to be adopted to secure the separate marketing of different grades of cotton.

NOTE.—"The Government of the Punjab wishes the Provincial Cotton Committee to consider whether any method of dealing with the practice of mixing of Punjab American Cotton (Kapas) with *Desi* other than provincial licensing of gins and presses can be suggested. This point will be included under the above head.

* * * * *

2. Regarding item 2 of the agenda, after a discussion, it was agreed that mixing takes place at several places and was done both voluntarily and involuntarily, that all we were concerned with was voluntary mixing at the ginning factory. It was admitted that mixtures in *Kappas* was comparatively easily detected. The Committee decided to limit their discussion to voluntary mixing at the factory only, though R.B.L. Sewak Ram suggested that mixing done elsewhere should also be discussed at some future time.

The Director of Agriculture read out to the members the gist of the recent correspondence with the Indian Central Cotton Committee on the subject of mixing of American and Desi cotton, and invited suggestions other than licensing of gins to overcome the evil.

After discussion it was agreed,—

(1) that a great deal of mixing of American and Desi cottons does take place at the factory;

(2) that the points brought up in Mr. Milne's letter No. 664-C, dated the 23rd July 1923, should be brought before the Indian Central Cotton Committee, and that the assistance of that committee be asked to push forward the proposals made in para. 5 of that letter;

(3) that before licensing of gins could be advised, a meeting such as that proposed by Mr. Townsend in his letter No. 103-63-452, dated the 12th May 1923, to Punjab Government should be called to discuss that question;

(4) with regard to Government's question as to whether a method of dealing with the practice of mixing American and Desi cottons other than licensing of gins could be suggested by the Provincial Cotton Committee, it was resolved that the proposals put forward in para. 5 of Mr. Milne's letter should be first thoroughly investigated.

* * * * *

A meeting of Departmental Officers, Cotton ginners and traders was held on 22nd August 1923, at 11 a.m. in the Council Room of the Agricultural College, Lyallpur, to consider methods of dealing with the evil of mixing Punjab American with Desi cottons which was so prevalent last season.

The assembly was given an idea of the opinions on the subject of the Members of the Indian Central Cotton Committee. In the discussion which followed the main points were :—

The ginners and traders present were strongly opposed to the licensing of gins. They said that mixing takes place :—

(*a*) in the seeds sown by the farmers,

(*b*) while the Kappas is being picked from the plants,

(*c*) while the labourers are storing it in the farmers' godowns,

(*d*) by petty shopkeepers and Arhtis who purchase Kappas from the farmers and bring it to the ginners,

(*e*) at the ginning factories by request of the agents of traders and spinners who purchase cotton at the gins.

Their opinion was that the cotton was mixed to a considerable extent before it left the farmers' hands; also it is reckoned that 85 per cent. of the Kappas in the Punjab is bought from the farmers by petty shopkeepers and Arhtis (see letter No. 4559, dated November 1920 from the Principal, Punjab Agricultural College, Lyallpur, to the Director of Agriculture, Punjab) and that these people are responsible for a very great deal of the mixing that takes place. The consequence is that cottons are mixed before they reach the ginners. Their view is that licensing of gins could not stop the mixing as the ginner has either to gin what is brought to his factory or refuse to do so, and he cannot refuse work in this way. If gins were licensed and he ginned mixed cotton, he would get a bad name and might lose his license. They also pointed out that ginners must meet the desires of their purchasers and that they frequently had orders for mixtures up to a certain extent.

The ginners therefore considered that until they could be assured of unmixed cotton coming to their factory; and that they would not be asked by purchasers to supply mixed cotton, their position would be untenable. They think that so long as the ginner supplies what his purchasers ask from him, he should not be punished.

A suggestion made by L. Bhagwan Dass was that there should be a law to compel factory owners to state the percentage of mixture in their bales. He said that as the exact amount of mixture was impossible to detect in ginned cotton by hand examination, people mix their cottons in the hope of getting in a greater percentage of Desi fibre than is believed to be in their consignments. He thought that if we had a method of ascertaining exactly the amount of mixture in a consignment, this hope would vanish and mixing would be reduced. The meeting agreed with this.

The Director of Agriculture then read his letter No. 664-C, dated the 23rd July 1923, to the Secretary of the Indian Central Cotton Committee and also Secretary's letter No. 2477, dated the 30th July 1923, in reply. The meeting was strongly in favour of the proposals in the Director of Agriculture's letter being followed out. They could suggest no better method of dealing with the trouble.

APPENDIX IX.

List of Selected Research Students.

Name.	Province.	Age.	Degree.	University and Years.	Other qualifications.	Where posted.
		Yrs.		COTTON BREEDING.		
Banerji	Bengal ..	25	M. Sc., Botany, 1st Class, 1922; Honours in Botany at B. Sc. 1920.	Calcutta, 1915-1922 (Presidency College).	Research Student, Botanical Section, Pusa, 1922 to date.	Madras. (Coimbatore).
B. B. Desai	Bombay ..	23¾	B. Ag. (2nd Class), 1922; (1st Class) Honours at Junior B. Ag. Examn). Specialised cotton.	Bombay Agricultural College, Poona, 1919-22.	Worked at cotton breeding under Mr. Patel, Surat.	Bombay.
Sheo Shanker Pande.	Central Provinces.	25	M. Sc. Botany 1923; B. Sc., Biology group 1921.	Punjab Government College, 1921-23, Allahabad, Agra College, 1917-21.	Published Thesis on Marsilia erosa for M. Sc.	Central Provinces.
Mohammed Afzal ..	Punjab ..	21	B. Sc. (Agri), 1923 Gold Medal.	Punjab Agricultural College, 1919-23.	....	Punjab. Lyallpur.
				ENTOMOLOGY.		
Sohan Singh Bindra	Do. ..	24	M. Sc., 1923, in Zoology by Research. Honours in Zoology at B. Sc., 1922.	Punjab Govt. College, Lahore, 1917-23.	Published two papers on research done.	Punjab.
				MYCOLOGY.		
Jiwan Singh ..	Do. ..	22	M. Sc., 1923, in Botany... ..	Punjab Khalsa College, 1919-21; Govt. College, Lahore, 1921-23.	Some research work during M. Sc. (two years) course.	Central Provinces.

APPENDIX X (*a*).

Schemes approved by the Indian Central Cotton Committee.

Description.	Capital.	Recurring.		1923-24 Budget.	Remarks.	Reference.
		Amount.	Period in years.			
	Rs.	Rs.		Rs.		
1 Central Cotton Committee ..	....	1,00,000	Permanent ..	1,00,000	Sanctioned budget Rs. 83,596, Reserve to be controlled by the Standing Finance Sub-Committee—Rs. 16,404.	Third Meeting, Indian Central Cotton Committee.
2. Technological Institute ..	3,05,000†	1,00,000	Do.	1,65,000 42,250	† If laboratory and bungalow built, otherwise Rs. 1,65,000.	Revised Estimates, Machinery Sub-Committee.
		..		2,07,250		
3. Bombay-Gujerat Schemes ..	....	25,000	3 to 5 ..	55,000	.....	Second Meeting, Indian Central Cotton Committee and Research Sub-Committee, 27th February 1923.
4. Bombay-Dharwar Scheme ..	..	25,000	3 to 5 ..			
5. Earias-Bollworm	....	15,000	3 to 5 ..			
6. Punjab Scheme	45,000	40,000	3 to 5 ..	65,000	Capital grant only if essential ..	Second Meeting Indian Central Cotton Committee.
7. Madras Herbaceum Scheme ..	6,000	12,000	3 to 5	5,000	Capital grant may not be needed ..	Second Meeting, Indian Central Cotton Committee and Research Sub-Committee, 27th February 1923.
8. Madras Bio-Chemical Scheme ..	..	25,000	3 to 5 ..	3,500	From 1924. Preliminary grant 1923	
9. U. P. Pink Bollworm Scheme ..	22,00	....	1 ..	22,000	Further grant in 1924 of 10,000 if essential.	Research Sub-Committee, 27th February 1923.
10. C. P. Schemes	Not yet settled.	23,000	3 to ..	18,000	.....	Do.
11. Research studentships	....	30,000	5	9,000	.....	Second Meeting, Indian Central Cotton Committee, and Research Sub-Committee, 27th February 1923.
12 Indore Research Institute ..	1,60,000 40,000	80,000 70,000*	3 to 5 grants to be reviewed after 3	2,00,000	80,000 first year. 70,000 second and third years.	First and Second Meetings, Indian Central Cotton Committee and Research Sub-Committee, 27th February 1923.
	2,00,000					
Total 1—12 ..	5,78,000	4,65,000 4,75,000	....	6,84,750	.....	
13. Stabilisation Fund for marketing new varieties.	No allotment, 1923,-1924.					

* Should be Rs. 75,000 to provide for increments in pay of staff.

Footnote.—Column corrected in the light of information received during the discussion of subject 9.

APPENDIX X (*b*).

Budget for 1923-24.

Major Head.	Amount.	Major Head.	Amount.
EXPENDITURE.	Rs.	RECEIPTS.	Rs.
1. Central Cotton Committee Administration.	1,15,000	1. Cotton Cess	8,91,000
2. Technological Research ..	2,73,500	2. Other Receipts	*Nil.*
GRANTS-IN-AID.		3. Interest	2,000
3. Bombay	55,000		
4. Madras	8,500		
5. Punjab	65,000		
6. Central Provinces	18,000		
7. United Provinces	22,000		
	5,57,000		
Closing Balance ..	3,36,000		
	8,93,000		8,93,000

APPENDIX XI.

REPORT OF TOUR IN BURMA.

The report of the Indian Cotton Committee (para. 161) refers to the general strengthening of the Agricultural Department which was at that time contemplated. This has now been practically completed, and during the present year the majority of the remaining Imperial Officers required have arrived. It is understood that the province will be divided into ten Deputy Directors' circles instead of two circles as at the time of the Cotton Committee's visit. A Botanist, Mr. Stock, was appointed in 1919 and devoted considerable time to cotton work. This officer has now been transferred to the post of Deputy Director of Agriculture of the most important of the cotton growing circles and a new botanist has recently been appointed. The latter will probably be largely occupied with rice work and it is apparently intended that plant breeding work in cotton should largely be carried out by the Deputy Directors. Two of these at any rate have had the necessary botanical training.

The Cotton Committee pointed out that owing to the small proportion of the cropped area occupied by cotton, the development of cotton growing must proceed parallel to the general extension of the department. It is consequently satisfactory to be able to record that the strengthening of the staff foreshadowed in the Cotton Committee's report has now been effected. The sub-division of the two unwieldy circles has greatly facilitated the development of cotton work and of the new compact circles, three, *viz.*, the Myingyan Circle, the Thayetmyo (West Central) Circle and the East Central Circle are cotton growing circles. The sub-division of Mandalay Circle is not yet completed as it is given effect to more attention being paid to the cotton growing area in the neighbourhood district of Sagaing and Schwebo.

The botanical survey of the cottons (referred to in paragraph 162 (1) of the Indian Cotton Committee's report) has been partly done by Mr. Stock who also has in progress a considerable amount of selection work. The recommendations in paragraph 5 have been given effect to so far as the Thayetmyo and Myingyan circles are concerned. The Allanmyo farm has been recently extended considerably and equipped with a small ginnery and a large farm of some 270 acres has been opened at Mahlaing in the Meiktila district. The latter is also equipped with a small ginnery.

The Cottons.

In the Allanmyo Circle the principal cotton is Wagyi* which is a monopodial type cotton of long growing period resembling Broach in agricultural habit. The Indian Cotton Committee reported this cotton to be of an average staple of $\frac{6}{8}$". It is characterised by high ginning percentage (about forty) whilst selections have been obtained ginning as high as 46 ; the staple is of a very variable character which explains why the cotton has been valued at various times as approximately equal to Oomras, slightly superior to Fine Bengals and much superior to Oomras. There is room for considerable improvement in the staple of this cotton by selection. A small sample sent to me for valuation which was subsequently examined in detail with the aid of a Balls' Sorter proved to be of fair $\frac{13}{16}$" average staple, the actual figures being $\frac{5}{8}$" 14 per cent., $\frac{3}{4}$" 28 per cent., $\frac{7}{8}$" 29½ per cent; 1" 12 per cent.; below $\frac{5}{8}$" 8½ per cent., above 1" 8 per cent. Larger samples sent for spinning trials were distinctly shorter and were only fit for 14s. counts at most, whereas the earlier sample would have been suitable for spinning at least 16s. warps. Selections made in the past have been chiefly made on ginning percentage. This is quite understandable as this cotton which is marketed as Prome machine-ginned was largely sold in Liverpool as short staple cotton.

Cambodia Cotton.—Cambodia cotton has been grown on an experimental scale by large cultivators for some years in the neighbourhood of Allanmyo. The 1922 crop was estimated to be about 40 bales. Cultivation of the variety would probably expand considerably given adequate prices. A sample of the 1921 year's crop was put through spinning tests by the Empress Mills, Nagpur, and though disappointing for Cambodia, compared favourably with the ordinary run of Punjab-American and was quite a fair cotton for 20s. It must be borne in mind that only from this year have there been adequate facilities for experimental work on Cambodia cotton in Allanmyo.

The indigenous cotton Wagyi is grown largely as a mixed crop with sesamum. The growing of Cambodia cotton necessitates a higher standard of cotton cultivation. It is entirely unirrigated, but irrigation is unnecessary as the Thayetmyo district is on the border of the wet zone.

Much work remains to be done on the proper sowing time for Cambodia cotton in this district and the best method of cultivation. It is

* Classified by Gammie as *G. obtusifolium var Nankin.*

by no means certain that the stock of seed is satisfactory and Cambodia seed from Madras, of selected strains of known lint character, should be tried. Work on the improvement of Wagyi cotton could go on side by side with the trial of Cambodia cotton with advantage. It is not certain that Cambodia will suit this tract, as rainfall is heavy and Cambodia cotton has a tendency to come into flower before the end of the rains, whereas the Wagyi crop flowers considerably later. In any case the future of Cambodia cotton will largely depend on the obtaining of adequate prices; the growers consider that it pays them for their extra trouble (taking into account the higher yield of Cambodia cotton if sown pure) if they get a premium of 10 Rupees per 320 lbs. of kapas. This premium should be readily obtainable provided a reasonable standard staple is maintained, despite the fact that the ginning percentage of Cambodia is 34 as against 40 for Wagyi. The results of comparative spinning trials on Wagyi and Cambodia cottons both grown by cultivators indicated that a premium of 9 Rupees per 100 viss of kapas (320 lbs.) would not be on the generous side. In the past premiums as high as Rs. 20 have been obtained.

The general similarity in habit between the Wagyi cotton and Broach cotton have already been referred to. A successful cross between these two cottons was made by Mr. McKerral some years ago and is now being tested. It might also be worthwhile trying pure line selections of Indian herbaceum cottons in this tract since they might suit the rainfall conditions better than American types.

Cambodia cotton in the Thayetmyo District is reported to be more susceptible to pink boll worm attack than Wagyi. Both the pink boll worm and the spotted boll worm occur, but *Wagyi* is reputed to be distinctly resistant, a point of considerable importance if it could be definitely proved.

The Myingyan Cottons.—The principal cotton here is known as Wagale which in general character distinctly resembles the Indian neglectum cottons. The growing period here is also short corresponding to that in the Bengals and Oomras tracts. The crop is somewhat precarious as timely rainfall is uncertain and a hardy type is the first consideration. The general run of the Wagale cotton which I saw was distinctly superior to Bengals in staple and some of the selections made were fully $\frac{3}{4}$" in staple. There is also considerable variation in ginning percentage. The selection now being distributed known as Tatkon IV has a ginning percentage

of 38 and a staple of $\frac{5}{8}$". The survey of the cottons of the province is by no means complete and it is not possible to state definitely the constituents of the Wagale mixture. Nor is it quite certain as to what two other cottons known as Wani and Wayin really are. The selection work now in progress on the farm is therefore of great importance to this area. It may be remarked here that the earlier selection work was done at the Tatkon farm in the Yamethin district (now in another circle). The farm is better adapted for cotton breeding work than Mahlaing on account of more certain rainfall. Mr. McKerral's crosses between Shan and Wagale cotton are also under detailed study and are extremely promising.

Yamethin district.—The Tatkon farm is situated in this district which is not considered to be one of the cotton growing districts proper but it possesses very distinct possibilities. At Tatkon Cambodia cotton has given promising results and there is a possibility of other American types doing well. There are distinctly favourable prospects for selected type of indigenous cottons.

The Shan States Cottons.—There is still considerable doubt as to what the Shan State cottons are. Most of these collected in the course of the survey showed a staple of $\frac{7}{8}$" and upwards (but mixed) combined with a low ginning percentage and delicate plant. It is not possible to say what this cotton is without detailed study, but some of its characteristics suggest the presence of an indicum cotton. The Shan States circle has not yet been constituted, and knowledge of this cotton is therefore chiefly confined to kapas which comes down the river to be ginned into specimens collected for survey purposes. It is interesting to note that at Bhamo (the traffic registration station for overland exports to China) cotton of 1" staple was found mixed in what was stated to be Myingyan cotton. This cotton was certainly not Cambodia but may have been Shan cotton.

Very promising results have been obtained with Cambodia cotton on the borders of the Chindwin river. The Lower Chindwin district is already an important cotton district, and there is considerable prospect of development here. The outlet for cotton in this district as also that of Shwebo and Sagaing adjoining districts is Monywa on the Chindwin. The cotton grown in this area is of the Wagale type but appears to be superior to Myingyan Cotton.

Marketing.—Ginning factories and presses are concentrated at a few important centres on the river, *viz.*, at Monywa on the Chindwin, at Myingyan which serves the Myingyan and Meiktila districts, and at Allanmyo—both of the latter on the Irrawady. Cotton from Pakokku district probably goes chiefly to Myingyan from the Magwe district to either Myingyan or Allanmyo. There are also gins and a press at Mahlaing on the railway.

Until recently cotton purchase, other than for overland export to China, was almost entirely in the hands of two firms, *viz.*, Messrs. Findlay Fleming & Co., and Messrs. Steel Bros. (successors to Jamals). At Allanmyo there are two presses belonging respectively to Steel Bros. and an Indian firm, Messrs. Munie & Co. At Myingyan there are now three presses and ginneries (belonging to Steel Bros., Findlay Fleming & Co., and a Japanese Agency respectively), and also now a number of small ginneries of 8—12 gins without presses. The latter are mostly Indian-owned but one is run by a co-operative society. The purchase of kapas throughout the province is almost entirely in the hands of travelling brokers who take advances from ginners or merchants and collect kapas from the villages. It is comparatively rare for cultivators to bring their own kapas to the ginning centres.

There have been several attempts to organise cotton markets particularly at Myingyan. There seems to be no demand from the cultivators at present for a market, and it would probably be unwise to attempt to open markets before such a demand arises. With the development of Co-operative Societies the possibilities of cotton markets, which of course would also have to be markets for other agricultural produce, might open up. At the present stage of development, when markets do not exist, it is obviously unnecessary to frame rules for regulating them.

Gins and Presses.—The ginning and pressing factories of the larger firms mentioned above are well equipped and well run, and so far the abuses referred to in the Indian Cotton Committee's report as common in India are hardly known in Burma. With the recent introduction of small ginning factories and of pressing on contract, conditions are likely to assimilate to Indian conditions. The Indian Cotton Committee recommended that their scheme for the licensing of gins and presses should be extended to Burma. The Central Cotton Committee's proposals are referred to in the body of the report. It is highly desirable

that such measures as are adopted in India should also be adopted in Burma. It is easier to prevent an abuse than to remedy it afterwards and there is every indication at present that the Burma cotton crop will grow in importance.

One of the main objects of the tour was to ascertain in what way the Central Cotton Committee could be of assistance to Burma, bearing in mind the special condit ons of that province. It seems probable that so soon as the Agricultural Department is able to seriously undertake the distribution of pure strains of cotton of improved staple they will require assistance in the marketing of small quantities. At present there is little connection between the Burma and Indian cotton markets. Burma cottons are not known or quoted in Bombay. Exports take place direct to Liverpool or Japan although it is understood that a limited amount of Burmese cotton finds its way to mills in Calcutta. In providing a market for limited quantities of new cottons Indian mills can be of considerable assistance particularly as increases in staple between $\frac{5}{8}''$ and $\frac{7}{8}''$ are better appreciated in India than in Liverpool. As the Burma cotton industry develops closer relations with Indian cotton markets may be anticipated. The Bombay hedge contract prices are now received at Myingyan and it is understood that Japanese purchasers hedge their purchases on the Bombay market. As already explained the scattered nature of cotton cultivation will possibly necessitate the work of cotton improvement being done largely by the Deputy Directors in charge of the cotton growing circles. The Committee's Technological Laboratory and the official valuations which we are now in a position to obtain should be of very considerable value to these officers.

APPENDIX XII.

PROGRESS IN THE INTRODUCTION OF IMPROVED VARIETIES OF COTTON IN VARIOUS PROVINCES.

Bombay.—In the last year another stage in the purification of the staple cotton of the Surat and South Broach district has been reached. A pure Navsari type of cotton is now almost entirely grown in the areas south of the Nerbudda, and the reputation of " Farm Cotton " is now firmly established all over this tract. The Rajpipla State is entirely sown with this type, and the Baroda districts are rapidly following into line. Provision has been made to prevent the cotton in this area again becoming impure by the application of the Cotton Transport Act to it. Three areas have been scheduled, in agreement with the Indian States concerned, namely, the ' South Surat area ' with Navsari as its chief mart with the best staple, the ' Surat area ' with Surat as its main centre, which extends northwards as far as the Tapti river, and the ' Olpad-Ankleshwar area ' which includes all the country between the Tapti and the Nerbudda rivers.

The area of special seed farms supervised by the Agricultural Department in this area remains at 18,000 acres, and seed for 200,000 acres has again been distributed, while a further large area is supplied with seed from private sources. Local co-operative societies are developing fairly rapidly, and six of these, each of which supplies pure improved seed, are now working. The system of special auction sales for improved cotton is now being given up, as it is found that the general standard has been so raised that they are no longer needed. The Agricultural Department however arranges the sale of the cotton from so much of the 18,000 acres which it supervises as requires its assistance.

Work in the rehabilitation of the cotton to the north of the Nerbudda has not been done in the same systematic way, though the pure seed supplied by the Agricultural Department has gone considerably into use. Generally speaking, however, the cultivators demand a higher ginning percentage in the *kapas* than any of the pure types of the Agricultural Department can give. A type which appears to combine all the qualities needed is now being multiplied in the Surat farm, and in a year or two will, it is hoped, be available in large enough quantity to distribute in the Broach district north of the Nerbudda.

In the Northern Gujerat (Dhollera) area, several pure types of *wagad* cotton, of high yield, quality and ginning percentage have now been evolved, and are now being multiplied in the neighbourhood of Viramgaon. These have been fully approved of by the Viramgaon millowners, and in a year or two will, if all is well, be in hand in sufficient quantity for wide distribution.

In the Kumpta-Dharwar area, the growth of improved types of Kumpta and Dharwar-American cotton continues to extend, and a time can be foreseen when they will be all but universally cultivated. The Agricultural Department supervises seed farms capable of supplying 10,000 acres of cotton each year. The seeds from these farms are supplied by preference to co-operative societies, who guarantee to market their *kapas* through the co-operative sale societies at Hubli, Gadag, and elsewhere. The area now planted with seed of known purity has reached figures as follows :—

Gadag No. 1 (Upland American) ..	45,456 Acres.
Dharwar No. I	38,980 ,,
Dharwar No.III	3,145 ,,

The two last are improved Kumpta cottons. The most important sale societies are those at Hubli and Gadag. The former deals chiefly with Kumpta cotton; the latter deals chiefly with Dharwar-American cotton. In both of these the *kapas* is sold after grading on the basis of cleanliness and of ginning percentage.

The Cotton Transport Act has been applied to the whole of the cotton districts in the Kumpta-Dharwar area and this, it is hoped, will prevent the introduction of undesirable cotton types, and the pure marketing of some of the very good qualities actually grown.

In Khandesh the general wide distribution of pure 'Roseum' or 'N.R.' cotton seed has been continued, and is now multiplied by a large number of registered seed growers, seed unions and agricultural associations. All their production is under the general supervision of the Agricultural Department and they furnish seed for 30,000 acres. This organisation has been much extended and perfected during the year.

A beginning has also been made in the multiplication of some new types of seed, which combine the high yield and ginning percentage of N. R.

cotton with a much improved staple. It will be at least two years however, before these will be available on a large enough scale to affect the usual type of cotton market in Khandesh.

Baroda State.—The important cotton growing areas of the Baroda State are much interlaced with those dealt with by the Bombay Department of Agriculture in the course of its operations in Surat. A definite scheme of joint action has therefore been arranged between the two departments of agriculture in order to produce and maintain uniform blocks of cotton true to one type. The State has now six seed depots in the Navsari district for supply of pure type (1027 ALF) supplied by the Bombay Department of Agriculture, and a special pure seed area of 400 acres has been organised. Including seed supplied by depots in adjoining British territory pure seed for 57,000 acres was issued last year.

Hyderabad.—There are two varieties of improved cotton in the Hyderabad State, *viz.*, Hyderabad Gaorani [*G. indicum* (*Lamk*)] and Western (G. herbaceum).

The crops were estimated at 4,51,000 and 59,000 bales respectively last season (1922-23). The Department of Agriculture has continued its important successful operation for the replacement of mixed cottons by the valuable Bani (Hyderabad Gaorani) type and for the maintenance of the latter in a state of purity which is indigenous to the Mahratwara tract of the Dominions of Hyderabad. By the exertions of the Hyderabad Agricultural Department the two administrative districts, Nander and Parbhani, have been covered with pure Bani, and these districts produced last season 3,02,000 bales. The Department is now extending the growth of pure Bani in the Bir district, the outturn last season being 16,498 bales.

Hyderabad holds a prominent place in Indian cottons and the value of this supply of long stapled cotton, undoubtedly one of the very best in India, to Indian mills, cannot be too strongly emphasised.

Central Provinces.—The problem of obtaining a cotton of superior staple capable of replacing Roseum has been seriously taken in hand. Seed has been distributed for 1,300 acres of 'Sindewahi Cross' and for about 1,000 acres of Bani cotton (in Berar); Cambodia cotton is being grown on a small scale in the Nagpur and Chanda districts.

The Agricultural Department has issued seed for some 300,000 acres of pure Roseum cotton.

United Provinces :—The withdrawal of special irrigation facilities has led to the area under Cawnpore-American cotton falling to a negligible quantity. Attention has in consequence been concentrated on the improved *desi* types. The selected Bundelkhand type J. N. 1 (suitable for 16s) continues to be popular and several thousand acres are now under cultivation. A selected type of the hybrid K-22 is also reported to be giving promising results around Muttra.

The extension of J. N. 1 cotton in the central tracts of the province continues but it does not appear to do well in the main cotton tracts of the west where other varieties have to be sought.

K-22 continues to be popular round Muttra and the local mills are buying up available produce at a premium. The plant, however, shows a certain weakness in germination which must be overcome before it can be confidently recommended to the ordinary cultivator.

A new variety known as Aligarh No. 19 has proved very promising. It has arisen from the Aligarh white flowered of which it possesses the robust habit and high ginning figure combined with lint superior to the original. It is already issued to cultivators and stocks are being built up.

The Punjab.—Punjab-American cotton (Lyallpur-American) has been established on a scale of some half million acres in the Canal Colonies. The 1921-22 crop gave an indifferent yield and much of it was of low quality and distinctly inferior to the 1920-21 crop. The question as to whether the type known as Lyallpur 4F is the most suitable in average years is receiving attention and promising results have been obtained with Lyallpur 285F which is being grown on an extended scale in suitable districts this year.

The 1921-22 crop was good both in yield and quality.

Burmah.—Experiment with Cambodia cotton continued to give promise, some 40 bales being produced by cultivation last year. The survey of the " Wagale " cottons is now nearing completion and experimental work is also in progress with Wagyi cotton. The provision of ginning facilities on the Allanmyo and Mahlaing farms has assisted in the supply of pure seed.

Madras.—In view of the rapid deterioration of the quality of Cambodia cotton, and having regard to the unsatisfactory nature of the seed supply to ryots in the tract, the Department has taken up the work of improvement of Cambodia cotton, so that the fair name of Coimbatore (Tiruppur) Cambodia may be maintained. This work was started four years ago and, according to the present arrangements, the Department enters into a yearly contract with selected ryots who agree to grow Cambodia cotton under irrigation in special areas known as "SEED-FARMS" from seed supplied by the Department and under departmental supervision. The crop is kept pure by the removal of any plants which are not true to type or variety. The produce of the first pickings alone is purchased by the Department between specified dates at a premium over the then ruling market price. All the kapas thus purchased is carted to a central ginning factory where it is ginned under Departmental supervision. The lint is sold by auction and the seed sold in retail to the ryots of the district. That the quality of the lint produced has been of the best is testified by the high prices paid for the cotton, and the eagerness with which the auction sales are attended by the representatives of the Bombay and other millowners. At each of the auctions held during the past four years, the Departmental cotton has always fetched a price of at least Rs. 20 per candy over the prevailing market rate.

The seed produced at the seed-farms is also purchased by ryots on account of its excellence and purity, and the quantities of seed produced and distributed during the past three years are noted below :—

1920–21	..	145,562 lbs.	sufficient	to	sow	9,700 acres.
1921–22	..	279,030 ,,	,,	,,	,,	18,600 ,,
1922–23	..	180,000 ,,	,,	,,	,,	12,000 ,,

Owing to the great demand for seed, the organisation of seed unions to enable the ryots to sell their cotton co-operatively while retaining the seed for distribution in the tract is under contemplation.

Company cotton (Karunganni) is now grown on 200,000 acres in Madura, Ramnad and Tinnevelly and is also displacing dry land Cambodia and Uppam in Coimbatore, 4,000 acres being grown in the latter district this year.

In the Northerns area sufficient seed for 8,500 acres of the selection Nandyal 14 ' (a white cotton of good length and strength and command-

ing a premium of ordinary northerns of Rs. 50 per bale) was issued by the Agricultural Department.

In the Westerns area the selection known as Hagari 25 was issued for 12,800 acres.

Irrigated Cambodia was grown on 118,500 acres of which 87,300 acres was in Coimbatore district, 14,500 in Ramnad, 9,000 in Madura and the rest in Trichinopoly, Tinnevelly and Salem. Of this 22,900 acres (20,000 in Coimbatore) were sown with pure seed issued by the Agricultural Department.

Madras Pest Act.

The provisions of the Madras Agricultural Pests and Diseases Act, 1919, were brought into operation in the Coimbatore district with regard to Cambodia cotton for the first time in the 1919 season. Notifications were issued under this Act directing that all Cambodia cotton plants should be pulled up from the ground and allowed to wither not later than the 1st of August 1919. For some years past the high prices paid for cotton had led many ryots to treat Cambodia cotton as a perennial crop, the plants being left on the ground for from two to four years, in fact so long as they would yield any crop at all. The natural result of this practice was that cotton insect pests, especially the pink boll worm and the stem weevil, multiplied unchecked. In the 1918-19 cotton season the effect of these pests on the crop was most marked. The cotton coming into the markets was stained and dirty and weak in fibre.

In 1920 the provisions of the Act were continued in Coimbatore and extended to parts of the Salem, Trichinopoly and Madura districts where Cambodia cotton is also grown, and were continued in these districts in 1921, 1922 and 1923.

There is no difficulty about irrigated Cambodia. The time of the second picking can be regulated by irrigation. It is the rain-fed crop which causes the trouble. If rains come in January, cotton is sown with their aid so late that good pickings have not been obtained by the 1st August, especially if the hot weather thunder storms bringing rains in April and May are late. That is to say, unless the Act were in operation, the crop would be on the ground all the year round, and there would be no chance of destroying the insect pests. The operation of the Pest Act

discourages these late sowings since crops sown in March and April have given little or no yield by the 1st of August when they have to be removed. The summer picking is eliminated under the Act. The insect attack increases to such an extent that although many flower buds are produced in the summer period, the percentage which open is practically the same as in the season, while more bolls fall off and there is more diseased material in the summer picking.

In all districts there are small areas where either the climatic conditions or the local Agricultural practices prevent the people from completely picking their crop when this is completed elsewhere. In 1920, a month's concession was given to certain villages but such a practice was found undersirable as it made difficult to enforce the Act elsewhere, and it is better when making exemptions, to exempt a whole area.

It was, therefore, decided to adhere to the same date for eradication in 1921, *viz.*, the 1st of August, with the exception of a small area in Pollachi taluk of the Coimbatore district where an extension of one month, to the 1st of September, was granted.

Last year 1922, in view of the late sowings on account of the season the date by which the cotton plant should be removed has been fixed for the 1st of September, instead of the 1st of August as hitherto. The change has been welcomed by the ryots as thereby they will get the maximum return from the summer crop. The effect of this change on the pink boll worm population appears to have been negligible. There are indications however that the spotted boll-worm increased in numbers as a result of this change and there is no doubt that the stem-weevil did so.

In 1921, a great improvement in the working of the Act was shown over former years, and this year saw a still further improvement. No special measures of compulsion have been found necessary. Propaganda work has been carried out by means of posters, leaflets and lectures during festivals and jamabandi camps on every possible occasion to enable the ryots to understand the reasons for the Act, and it now works quite smoothly, and there is little or no difficulty in getting the crop pulled out by the required time, with the help of the Revenue Inspectors under the supervision of officers of the Agricultural Department.

The result of the operations of the Act has been marked in the high quality of the cotton produced in 1921 and 1922. At Tiruppur, the great

buying and ginning centre in Coimbatore, the opinion of the buyers is unanimous that the quality of the cotton has improved since the introduction of the Act. There are also signs that the pink boll-worm itself is decreasing in numbers. Investigations of the Government Entomologist show that there has been a perceptible decrease in the boll-worm population as may be seen from the following figures :—

Year.	Percentage of boll-worm infestation.
1919	75.84
1920	55.50
1921	41.00
1922	38.00
1923	30.00

The Times Press, Bombay—J. 6439-23.

ANNUAL REPORT

OF THE

Indian Central Cotton Committee,

BOMBAY,

FOR THE

YEAR ENDING 31st AUGUST 1924.

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Year ending 31st August 1924.

CONTENTS.

	Page
Functions of the Committee	1
Personnel	1
Officers and Sub-Committees	5
The work of the year	9
Cotton Transport Act	9
Regulation of Gins and Presses	11
Open Cotton Markets	12
Cleaner Picking of Cotton	12
Mixing of Punjab-American Cotton	13
Empire Exhibition	14
Empire Cotton Growing Corporation	15
Research :—	
1. Agricultural	
(*a*) Provincial Schemes	16
(*b*) Central Agricultural Research Institute for Cotton Work ..	17
2. Technological Research	18
3. Studentships	18
Secretary's Tours	18
Collection and Supply of Information	19
Annual Report of the Director, Technological Research Laboratory, 1923-24.	22

APPENDICES.

I. Functions of the Committee	35
II. Baroda Notification under the Cotton Transport Act	37
III. Regulation of Gins and Presses Bill	40
IV. Figures for Cleaner Picking of Cotton	47

		PAGE
V.	List of Exhibits, British Empire Exhibition	50
VI.	List of Research Students	52
VII.	Progress in the introduction of improved varieties of cotton in various provinces	53
VIII.	Indian Cotton Cess (Amendment) Act, 1924	61
IX.	Government of India Notifications amending the Cotton Cess Rules	63

ANNUAL REPORT OF THE INDIAN CENTRAL COTTON COMMITTEE, BOMBAY, FOR THE YEAR ENDING 31st AUGUST 1924.

FUNCTIONS OF THE COMMITTEE.

In the Government of India resolution constituting the Committee its functions are broadly stated as following the recommendations of paragraph 261 of the Indian Cotton Committee's Report. These are quoted *in extenso* in Appendix I. The functions of the Committee will become more sharply defined as experience is gained. Apart from its more formal activities the Committee is a central body charged with the promotion of all measures which will aid the improvement of the great Indian cotton-growing industry. Its representative character not only renders it well qualified to advise the Central and Provincial Governments in matters concerning the industry but affords a common meeting ground for all sections of the trade with the Agricultural Departments which enables difficulties to be discussed and joint action taken for the common good.

With the passing of the Cotton Cess Act and the Cotton Transport Act, both accomplished facts, and the Bill for the Regulation of Gins and Presses, which is now before the consideration of the Government of India, the activities of the Committee will be more and more evidenced in schemes for the promotion of agricultural and technological research on cotton.

PERSONNEL.

The personnel on August 31st was as follows :—

1. President.—The Agricultural Adviser to the Government of India *ex-officio*, Dr. D. Clouston (Dr. W. H. Harrison officiating).

2. REPRESENTATIVES OF AGRICULTURAL DEPARTMENTS.

Madras ..	.. Mr. R. C. Broadfoot, Acting Cotton Specialist.
Bombay ..	.. Mr. T. F. Main, Director of Agriculture.
United Provinces	.. The Director of Agriculture, Mr. G. Clarke.
Punjab.. ..	.. The Director of Agriculture, Mr. D. Milne.
Central Provinces	.. The Director of Agriculture, Mr. F. J. Plymen.
Burma ..	.. Mr. T. D. Stock, Deputy Director of Agriculture.

3. THE DIRECTOR-GENERAL OF COMMERCIAL INTELLIGENCE, *ex-officio*, Mr. L. J. MacIver, I.C.S.

4. REPRESENTATIVES OF CHAMBERS OF COMMERCE AND ASSOCIATIONS.

The East India Cotton Association	.. Mr. W. Ellis Jones.
The Bombay Millowners' Association	. Mr. J. A. Kay, M.L.C.
The Bombay Chamber of Commerce	.. Mr. V. A. Grantham, M.L.C., (*Vice-President.*)
The Indian Merchants' Chamber, Bombay	.. Sir Purshotamdas Thakurdas, Kt., C.I.E., M.B.E., M.L.A.

Karachi Chamber of Commerce	Mr. F. G. Travers.
Ahmedabad Mill-owners' Association..	Seth Kasturbhai Lalbhai, M.L.A.
Tuticorin Chamber of Commerce	Mr. G. Z. Meli.
Upper India Chamber of Commerce ..	Mr. H. Horsman.
The Empire Cotton Growing Corporation	Mr. W. Roberts.

5 and 6. COMMERCIAL REPRESENTATIVES NOMINATED BY LOCAL GOVERNMENTS.

Central Provinces ..	Mr. S. B. Mehta, C.I.E. Rao Bahadur K. S. Nayudu, M.L.C.
Madras	Mr. H. F. P. Hearson.
Punjab..	Rai Bahadur Seth Prabhu Dayal, M.B.E.
Bengal	Mr. B. K. Lahiri.

7. CO-OPERATIVE REPRESENTATIVE.

Mr. B. F. Madon.

8. REPRESENTATIVES OF COTTON GROWERS.

Madras	M.R.Ry. R. Appaswami Naidu Garu. M.R.Ry. B. P. Sesha Reddi Garu.
Bombay	Rao Bahadur Bhimbhai Ranchodji Naik. Professor S. C. Shahani.

United Provinces ... The Hon'ble Sir Muhammad Muzammil Ullah Khan, K.C.I.E., O.B.E.
The Hon'ble Lala Sukhbir Sinha.

Punjab .. .. .. Rai Saheb Chaudhri Chhotu Ram, M.L.C.
Mr. H. T. Conville.

Central Provinces and Berar .. .. Rao Sahib V. G. Kulkarni, M.L.C.
Mr. N. V. Deshmukh.

9, 10 and 11. REPRESENTATIVES OF INDIAN STATES.

Hyderabad State .. Mr. Mazhar Hussain, Director of Agriculture.

Baroda State .. .. Director of Commerce and Industries, Dr. S. M. Pagar, M.A.

Gwalior State .. .. Dy. Director of Agriculture, Mr. Shahzad Ahmed Khan, B. Sc.

Rajputana and Central India States .. Mr. A. Howard, C.I.E., Imperial Economic Botanist.

Additional persons nominated by the Governor-General in Council:—

1. Mr. K. B. Tilloo, Representative of the Indore State.
2. Mr. W. Youngman.
3. Rao Sahib Bhimbhai M. Desai, Representative of the Agricultural Department in Gujerat.

Secretary (appointed by the Government of India)—Mr. B. C. Burt, B.Sc., M.B.E., I.A.S., (Mr. G. R. Hilson, B.Sc., I.A.S., officiating.)

As will be seen a number of changes in the personnel have occurred during the year. Ten members retired by ballot, of whom five were re-appointed. The Committee has suffered a great loss in the retirement of the first President, Mr. S. Milligan, who has severed his official connection with India.

Meetings.—Three meetings of the Central Cotton Committee were held during the year under report, on September 4th—6th 1923, January 28th—30th 1924 and July 7th—9th. The first of these meetings was a delayed meeting which should have been held in August 1923 and was dealt with in last year's report. The attendance at all meetings was good.

Vice-President.—Mr. V. A. Grantham (representing the Bombay Chamber of Commerce) was again appointed Vice-President of the Committee for the year 1924-25.

Sub-Committees.—As required by the Cotton Cess Rules a Standing Finance Sub-Committee consisting of the following members was appointed :—

Mr. V. A. Grantham, M.I.C. (Vice-President and Chairman, *ex-officio*).

Sir Purshotamdas Thakurdas, Kt., C.I.E., M.B.E., M.L.A.

Mr. B. F. Madon.

Rao Bahadur Bhimbhai Ranchodji Naik.

Mr. W. Ellis Jones (Mr. F. G. Travers officiating for Mr. W. Ellis Jones during the latter's absence from India.)

Mr. G. Z. Meli.

Dr. H. H. Mann (Mr. T. F. Main replaced Dr. H. H. Mann on the Committee when the latter left India on leave).

Mr. J. A. Kay (Mr. S. D. Saklatwala officiated for Mr. J. A. Kay, when the latter was out of India).

Under the Cotton Cess Act and Rules the Standing Finance Sub-Committee controls the finances of the Committee subject to such restrictions and directions in regard to policy as may be laid down by resolution of the Central Committee.

The Finance Sub-Committee has met on eighteen occasions during the year.

The Local Sub-Committee, which consists of all members of the Central Cotton Committee living in or near Bombay and whose functions are to deal with matters of a general nature, consideration of which cannot be delayed until a meeting of the full Committee is held, met on three occasions during the year. This Committee performed very useful service in aiding the deliberations of the Government of Bombay in regard to the application of the Transport Act to that Presidency and in solving difficult points affecting the Committee's proposed Bill for the Regulation of Gins and Presses.

Agricultural Research Sub-Committee.—A Sub-Committee comprised of the President, Mr. S. Milligan; the Vice-President, Mr. V. A. Grantham; Messrs. Clouston, Howard, Hilson, Mann, Roberts, Shahani and Henderson (co-opted) met during the 7th meeting of the Central Cotton Committee to consider the progress made in research schemes and to discuss a scheme of research for Sind.

A new Agricultural Research Sub-Committee was appointed in July to discuss new schemes of research submitted at that meeting and to discuss the first annual report of schemes already in progress. This Sub-Committee included the President, Dr. W. H. Harrison; the Vice-President, Mr. V. A. Grantham; Messrs. Broadfoot, Deshmukh, Lahiri, Madon, Main, Milne, Pagar, Sir Purshotamdas Thakurdas and Mr. Youngman.

Technological Research Sub-Committee.—At the 7th meeting of the Central Cotton Committee it was decided that a Technological Research Sub-Committee, consisting of the Vice-President (Chairman), two spinners and two agricultural officers, should be formed. Messrs. Mehta and Saklatwala were appointed to represent the spinners and Messrs. Milne and Mann to represent the agricultural officers (Mr. Main to succeed Dr. Mann when the latter went on leave). This Sub-Committee met twice during the year. On the second occasion Mr. Kay replaced Mr. Saklatwala who has retired by ballot from the Central Cotton Committee.

Selection Sub-Committees.—During the year four Selection Sub-Committees met to appoint (1) A Spinning Master, (2) Research Students, (3) Scientific Staff for the Technological Laboratory and (4) Scientific Staff for the Technological Laboratory and a Botanist for the Punjab scheme of Research.

The members of these Sub-Committees were:—

(1) The President, Mr. S. Milligan; the Vice-President, Mr. V. A. Grantham; Messrs. Saklatwala, Mehta, Horsman and Travers.

(2) The President, Mr. S. Milligan; the Vice-President, Mr. V. A. Grantham; Messrs. Clouston, Hilson, Mann, Milne, Howard and Pagar.

(3) The President, Dr. Clouston; Mr. W. Ellis Jones and Mr. A. J. Turner, Director of the Technological Laboratory.

(4) The President, Dr. Clouston; Messrs. W. Ellis Jones, B. F. Madon and A. J. Turner.

Staff.—Mr. B. C. Burt continued as Secretary up to April 3rd when he left India on leave. Mr. G. R. Hilson acted as Secretary until the end of the year.

Mr. A. J. Turner, M.A., B.Sc., was appointed as Director of the Technological Laboratory and took up his appointment as from January 1st, 1924.

Mr. W. Briggs was appointed as Spinning Master and joined his appointment on the 1st March 1924. Unfortunately Mr. Briggs had to leave India for reasons of health very shortly after taking over his duties and Mr. W. B. Walmsley was appointed temporarily in his place.

Appointments to the posts of Chemist, Miscroscopist, Statistical Assistant, Testing Assistants (2) and Electrician under the Director, Technological Laboratory, were made during the year.

Provincial and Local Cotton Committees.—No further additions to the list of Provincial and Local Cotton Committees given in last year's report are to be reported this year.

Meetings were held by the Provincial Cotton Committees in Madras, twice, Central Provinces, once, and the Punjab, twice.

The Bengal Cotton Sub-Committee met once during the year.

The Work of the Year.

COTTON TRANSPORT ACT.

A full account of this Act and the benefits to the grower and the trade to be derived from its application will be found in the Committee's Report for last year.

AREAS NOTIFIED AND PROGRESS.

During the year the Baroda Darbar passed an Act closely corresponding to the Indian Cotton Transport Act and issued a notification (Appendix II) applying it to certain areas. These areas were so selected as to fit in with the three zones notified[1] by the Government of Bombay last year.

The working of the Act in the Bombay Presidency during the year under report has entirely justified the expectations of the Committee and satisfactory accounts of the beneficial effect of the operations of the Act are being received.

In general, trade representatives are of the opinion that in the Southern Areas while a certain amount of mixing of mill fly with pure cotton was done by those who had stocks of fly on hand, a very effective stop was put to the importation of further stocks of fly and of inferior cotton into the protected areas; that in consequence of this, not only were buyers able to operate with greater confidence and offer better prices, but also, despite the poorness of the season, when the contrary might have been expected, the quality of the staple was on the whole better than was the case in previous years.

In the Northern Areas where the question of mill fly does not come into play, a similar appreciable improvement in the staple

[1] See pages 78-79 of Annual Report for 1922-23.

was noticeable, although here also a drop in quality, owing to the poor season, was to be expected.

This opinion is confirmed by the Director of Agriculture, Bombay, who in a report on this subject states :—

" Some difficulties have been encountered in applying the Act *e.g.*, certain markets like Surat and Gadag have been closed to growers and traders who formerly brought their cotton to these places, and the growers of excluded areas have in some cases complained that the opportunities for sale have been materially restricted owing to the absence of or small number of gins and presses in their vicinity, other than those in the protected area.

These alleged grievances have been considered and it is anticipated that it will be possible to adjust the operation of the Act in such a way as to remove all legitimate complaints. Moreover, it is significant, how rapidly trade organization appears to adapt itself to the circumstances arising out of the operation of the Act, *e.g.*, new presses are springing up north of the Tapti river to meet the new demand owing to the loss of these in Surat, *e.g.*, in the Kim-Sayan tract there was only one press until the current season when three new ones have been installed for preparing full-pressed bales.

2. The great value of the Act may be gauged from the following considerations :—

Hubli, which is the biggest cotton market in the Southern Division of this Presidency, used to import upto 20,000 bales of inferior stuff (cotton waste and short stapled cottons of the Bengal and Khandesh types) by rail for mixing purposes, and " Kumpta " cotton in this market had lost its reputation in the Bombay market. All this importation has now been stopped and the value of Hubli " Kumpta " cotton has largely recovered its reputation in the

Bombay market with great consequent financial gain to the cotton grower and satisfaction to the cotton consumer.

Similarly Gadag—the next largest market in the Southern Division—used to import upto 5,000 bales of cotton waste and short stapled cotton by rail from the north. All this importation by rail has been stopped. In protecting this market we have encountered some difficulty with road transport and we are considering the best means of dealing with this problem.

With regard to the protected areas in Gujerat, there was a considerable import of seed cotton amounting to 3,000 Bhars (2,880,000 lbs.) in 1923 across the Nurbadda bridge by rail. This has now been entirely stopped, and it is significant that the margin between Broach and Navsari prices has broadened from Rs. 100 per Kandy before the Act to Rs. 150 after the Act."

MADRAS.—The Madras Provincial Cotton Committee has recommended that the Cotton Transport Act should be applied to three areas in that Presidency, (1) The Northerns and Westerns area, (2) The Cambodia area, and (3) The Tinnevelly area. The last named area was included in the recommendation at the request of this Committee. Their recommendations are at the time of writing under consideration by the Government of Madras.

REGULATION OF GINS AND PRESSES.

As was pointed out in last year's report the Committee's proposals in this connection form a natural complement to the Cotton Transport Act, the essential feature being the provision of means by which the trade can protect itself against abuses.

The Committee's proposed bill, a rough draft of which will be found in Appendix IV of last year's report, has been under the consideration of the Government of India during the year. At the

time of writing a bill has been placed before the Legislative Assembly and has been sent back for circulation for opinions, the period of circulation being fixed at three months.

A copy of this bill will be found in Appendix III. It will be seen that it contains no reference to licensing, a matter in which the Committee is keenly interested and for which provision was made in the draft bill to which attention has already been drawn.

OPEN COTTON MARKETS.

It is with regret that the Committee have to report that little progress has been made during the year in the adoption of their recommendations for the establishment of open cotton markets. In Bombay the draft bill finally recommended by the Committee has been in circulation to different bodies in that Presidency and is still under consideration by the Government of Bombay. In Madras the Provincial Cotton Committee have recommended to the Government of Madras that a bill on similar lines to the Bombay (District) Cotton Markets Bill should be introduced. This recommendation the Government of Madras have decided not to adopt for the present. This decision has been arrived at in view of the fact that the Madras Government have under consideration a Bill to amend the District Municipalities Act, 1920. This Act, if amended, will provide Municipalities with the necessary power to frame bye-laws for the management of open cotton markets on the lines recommended by this Committee. The Madras Government desire therefore that a reasonable opportunity should be given to Municipalities with their increased powers, to manage cotton markets before the question of introducing special legislation should again be raised.

CLEANER PICKING OF COTTON.

At the request of the Committee Directors of Agriculture in the Provinces supplied information showing the extra cost which would have to be incurred by the cultivator if he picked his produce

carefully and the premium which he would have to be paid to make it worth his while to do so. The figures obtained are shown in Appendix IV.

On the basis of this information the question was discussed at the 7th meeting of the Committee. The trend of the discussion showed that where the premium necessary to offer sufficient inducement to cleaner picking amounted to about Rs. 16 per Bombay Khandi of 784 lbs. of lint as in the case of Tinnevellies and Cambodia the present scale of 'on' allowances would make clean-picking profitable even if the cotton were tendered against Hedge contracts. Where however as in the case of Northerns and Westerns where the principal factor is the material loss of weight and the corresponding reduction in blowroom loss through clean-picking, direct sale to consumers was the obvious method to adopt.

The success obtained by the auction sales of graded kapas conducted by the Co-operative Sale Societies working in the Kumpta area and dealing with a cotton marketed in an equally dirty condition to Northerns and Westerns points the way to the solution of this problem.

MIXING OF PUNJAB-AMERICAN COTTON.

During the year a meeting of cotton-growers, ginners and traders with members of the Punjab Provincial Cotton Committee was held at Lahore to consider further the steps to be taken to put a stop to the practice of mixing local cotton with introduced American cotton. This was followed up by a meeting of the Provincial Cotton Committee held at Simla. At neither of these meetings was any new light thrown upon the position.

The reports of these two meetings were placed before the Central Cotton Committee and were discussed at the 8th meeting. The discussion merely traversed old ground and once again after very

careful consideration of all alternatives the Central Cotton Committee decided that the licensing of gins and presses in the Punjab Canal Colonies was the only real immediate remedy against mixing.

EMPIRE EXHIBITION.

At the invitation of the Commissioner for India for the Empire Exhibition the Committee decided to arrange for a special exhibit of Indian cottons for the All-India section of the Empire Exhibition and a special Sub-Committee was nominated to settle details.

It was decided that attention should be concentrated on raw cotton and that the exhibit should consist of two sections, (1) a Commercial section, consisting of sample bales of different growths and (2) a Research section, consisting of lint, kapas, combed seeds, etc., of new cottons. It was also arranged that the exhibit should include —

(1) diagrams, models and samples showing the importance of India as the biggest cotton producer in the Empire.

(2) diagrams, models, etc., illustrating the approximate composition of the Indian crop classified broadly as regards staple.

(3) diagrams and specimens to show the progress which has been made during the last 10 years or so in the improvement of cotton cultivation in India.

(4) cotton growing maps of India

(*a*) with respect to staple,

(*b*) with respect to quality and density of crop.

A list of the exhibits shown will be found in Appendix V.

The Committee has to acknowledge its indebtedness to the Departments of Agriculture in the Punjab, United Provinces, Central Provinces, Bombay, Madras, Mysore and Burma for their ready response to a request for material much of which was supplied free, and to the following :—

Messrs. R. D. Tata & Co., Ld...	for a cloth cover for the stall.
The East India Cotton Association	.. for a set of cotton standards.
Sir Ganga Ram ..	.. for a bale of Punjab American 4F.
Messrs. Volkart Bros...	.. for an octopus bale.
Sir M. Dadabhoy ..	.. for a bale of Gaorani cotton.

The Committee's stall was made and set up in Bombay and the arrangement of the exhibits settled before despatch.

All expenditure on this exhibit was met from funds supplied by the Government of India.

EMPIRE COTTON GROWING CORPORATION.

The Committee have had under consideration the question of bringing more prominently to the notice of spinners in Lancashire the better types of cotton produced in India. In pursuance of this object the Committee have been actuated by a double motive. In the first place owing to the fact that a considerable amount of the better quality cotton exported from India is mixed, a wrong impression prevails as to the quality of cotton which India is capable of supplying. This impression it is desirable to remove. In the second place it is considered advisable to encourage a foreign demand for the better types of Indian cottons as this would assist in stabilizing prices and in maintaining the payment of an adequate premium to the growers and would therefore further the efforts now being made to improve the quality of Indian cottons.

The Empire Cotton Growing Corporation who were approached with a request for assistance in this matter welcomed the Committee's suggestion to send representative bales of cotton and have made arrangements in co-operation with the British Cotton Growing Association to have these bales thoroughly tested and the results communicated to the trade in Lancashire.

Thirteen bales of the following growths were sent :—

Surat	1027 A. L. F. ..	.. 2 bales
Dharwar-American ..	Gadag No. 1 ..	.. 1 bale
Kumpta	Dharwar No. 1 ..	.. 1 ,,
Northerns	Sircar No. 14 ..	.. 2 bales
Westerns	Sircar No. 25 ..	.. 1 bale
Cambodia	.... ..	.. 2 bales
Karunganni	Company No. 3 ..	.. 2 ,,
Punjab-American ..	.. 285 F ..	.. 1 bale
,, ,, ..	.. 289 F ..	.. 1 ,,

The results of the spinning tests are not yet to hand.

The Committee also arranged for the supply of 10 bales of Indian cottons required by the Empire Cotton Growing Corporation to complete their exhibit for the Empire Exhibition.

RESEARCH.

(1) Agricultural.

(*a*) *Provincial Schemes.*—There is little to report on this subject. The schemes of research in the United Provinces, Central Provinces, Bombay and Madras reported as having started in last year's report are now well in progress and are proceeding satisfactorily. The Punjab Research Scheme has not yet been commenced owing to the difficulty experienced in obtaining a cotton Botanist with the desired qualifications, a difficulty which has not yet been

overcome. The Sind Research scheme is still in abeyance awaiting the initiation by the Government of Bombay of the wider scheme referred to in last year's report.

No fresh schemes were approved of during the year.

(*b*) *Central Agricultural Research Institute for Cotton Work.*— Considerable progress is to be reported in regard to this scheme of which practically all details have now been settled.

It has been arranged that the Institute shall be managed by a Governing Body consisting of seven members of whom the Agent to the Governor-General in Central India shall be *ex-officio* Chairman. Three of the members are to be nominated by the Indian Central Cotton Committee, one member by the Indore Darbar and two by the remaining Central India States concerned. The Indian Central Cotton Committee have nominated Sir Purshotamdas Thakurdas, Kt., C.I.E., M.B.E., M.L.A., the Agricultural Adviser to the Government of India and the Secretary as their representatives.

The cost of this scheme is to be met from a combined recurring grant of Rs. 20,800 contributed by the Darbars of the Central India States, Indore, Datia, Dhar, Dewas-S.B., Ratlam, Jaora, Sitamau and Narsinghgarh, a recurring grant limited to one lakh and a non-recurring grant of two lakhs for capital expenditure both made by the Indian Central Cotton Committee. In addition to their monetary contribution the Indore Darbar are giving the use of 300 acres of land at a nominal rent.

The Government of India have sanctioned the deputation of Mr. and Mrs. Howard, who are at present on leave, for work at the Institute. It is expected that very shortly after their return a beginning with the actual work will be made.

(2) Technological Research.

Very satisfactory progress with this scheme has been made during the year. The Spinning Laboratory has been erected and fully equipped and the staff have been appointed. A detailed account of the progress made and of the work of the year will be found in the report of the Director, Technological Research Laboratory, which is attached.

(3) Studentships.

During the year four appointments were made in addition to the six already appointed. Of these one resigned. A list of all students receiving scholarships from the Committee will be found in Appendix VI.

Secretary's Tours.

Mr. Burt was on duty at the headquarters of the Government of India in September-October and again in March in connection with legislation in progress. In the interval he toured in the Punjab in October, visiting cotton estates; while there he attended meetings of the Lower Bari Doab Canal Colony Agricultural Association and of the Okara Zemindar Co-operative Association; in December he visited Surat and Poona and made a short tour in the Central Provinces. At Surat he attended a meeting of the Divisional Sub-Committee called to discuss matters relating to the Cotton Transport Act and at Poona and in the Central Provinces he inspected work on cotton in progress. In January he spent some time at Bangalore attending meetings of the Science Congress and of the Board of Agriculture and in February at the request of Shreeman Maharaj Kumar Sir Bhupal Singhji Bahadur he visited Udaipur and gave advice in regard to the growing of long stapled cotton.

The Officiating Secretary was on tour in August-September in Madras Presidency attending a meeting of the Provincial Cotton Committee in Madras and inspecting cotton work at Coimbatore.

COLLECTION AND SUPPLY OF INFORMATION.

As was done last year a note on the recent progress in the introduction of improved varieties of cotton has been contributed to the Bombay Cotton Annual which is published by the East India Cotton Association. The substance of this is reproduced in Appendix VII.

The Committee is again indebted to the British Cotton Industry Research Association for the supply of their weekly summary of current literature in which abstracts appear of all work published in connection with cotton growing and cotton technology and reference is made to the scientific work bearing on these subjects, and also for the supply of copies of the Shirley Institute Memoirs.

To the Empire Cotton Growing Corporation the Committee are also indebted for the supply to the library and to members of the Committee copies of their own proceedings of special reports obtained by them on cotton prospects in other parts of the Empire and of their Review which is published quarterly. They have also supplied us with a considerable amount of information in regard to special cotton legislation in other countries.

The Committee has in addition a large circle of Government Departments and Public Bodies, interested in cotton, both within and outside the Empire with whom an exchange of publications is made.

FINANCE.

The Cotton Cess collections for the financial year ending the 31st March 1924 amounted to Rs. 12,86,995 which is higher than anticipated by nearly four lakhs and the Committee's expenditure up to the same date was Rs. 3,98,486 which is much less than expected owing to the fact that most of the schemes now in progress were started late in the year and some schemes for which provision was made have not yet started. During the five months of the new financial year which have elapsed the cess collected amounts to Rs. 4,96,837 and the expenditure for the same period Rs. 1,84,504. The heavy expenditure of the year on the Indore scheme and on the Research Laboratory is however yet to come.

MISCELLANEOUS.

During the year an Act No. 1 of 1924 to amend the Cotton Cess Act received the sanction of the Legislative Assembly. This amendment makes possible the collection of cess throughout the whole of Bombay Presidency by the Collector of Bombay and permits of the levy of cess on exports by land from British India to foreign territory outside India. The terms of this Act are given in Appendix VIII.

The following notifications were also issued by the Government of India —No. 3, dated the 2nd January 1924, amending the Cotton Cess rules and adding rules defining the procedure to be followed in regard to the appointment and resignation of a Vice-President and regulating subscription to the Committee's Provident Fund ; No. 575, dated the 9th April 1924, issuing the rules of the Committee's Provident Fund and No. 576 of the same date amending the Cotton Cess rules and empowering the Finance Sub-Committee or the President in certain cases to call upon a servant of the Committee to furnish security. Copies of all these notifications are given in Appendix IX.

CONCLUSION.—The Committee can look back with satisfaction upon the progress made during the year and can face the future confident that a sure foundation has been laid for much useful work. It has again to be stated that this position would not have been achieved had it not been for the ungrudging manner in which the members of the Committee gave of their time, particularly the Vice-President and the members of the Finance and Local Sub-Committees upon whom devolved the more difficult part of the work, the consideration of detail.

G. R. HILSON.

ANNUAL REPORT OF THE DIRECTOR, TECHNOLOGICAL RESEARCH LABORATORY, 1923-24.

The objects for which the Technological Research Laboratory has been instituted follow from the suggestions regarding the appointment of a Technologist made by the Indian Cotton Committee in Section 262, page 162, of their Report, 1919. The duties which would devolve upon the Technologist were stated to be :—

(1) He should help the Agricultural Departments to arrive at a correct judgment of the value of any new varieties of cotton produced.

(2) He should also undertake other lines of research relating to cotton; such, for example, as an investigation into the differences between the fibres of American and Indian yarns.

(3) He should also be able to value different varieties of cotton in such a way as to bring out clearly the real value of staple and of definite increases in its length.

The Indian Central Cotton Committee, immediately after its formation, endorsed the views of the Indian Cotton Committee concerning the appointment of a Technologist, and at once proceeded with the necessary arrangements. As the most satisfactory method of ascertaining the (spinning) value of cotton is the spinning test itself, the Central Committee decided to erect an Experimental Spinning Plant in order that such tests might be made under its own control. The spinning test, for the present at least, represents the key to all technological research on cotton. Besides these spinning tests, however, it has been planned to carry out an extensive series of investigations into the properties of the various types of Indian cottons. In every case an attempt will

be made to correlate their properties with the results of the spinning tests. For these supplementary investigations of a scientific nature, the Central Committee decided to erect a second building as a Research Laboratory, adjacent to the Spinning Laboratory. The provision of these buildings, along with the necessary staff and equipment, renders possible a complete survey of the present standard Indian cottons, as well as the investigation of new types. From these investigations it is confidently expected that much benefit will be derived in connection with the selection of suitable varieties for growing, and further that facts concerning different growths will become available which will be of the greatest assistance in the marketing of Indian cottons.

As indicated above, at the present day the spinning test is undoubtedly the best method for ascertaining the spinning value of cotton, seeing that it approximates most closely to the practical conditions of working. The chief objection which can be levelled at the spinning test is that the result obtained depends a great deal on the spinning machinery available and on its being maintained in proper working condition; and also upon the personality of the Spinning Master who is responsible for deciding the settings, drafts, speeds, etc. As a measure of control, both as regards the functioning of the machinery and the personal equation of the Spinning Master, it is planned to keep records as comprehensive as possible for each spinning test. In this way records will be available of the following:—

(1) Grade and staple (as estimated);

(2) Fibre weight, length and strength;

(3) Machinery settings, drafts, speeds, etc.;

(4) Temperature and humidity at which the spinning test is made;

(5) Counts being spun and the calculated twist;

(6) Regularity of material at each stage;

(7) Breakages;

(8) Waste made at each stage;

(9) Moisture content at various stages;

(10) Yarn properties including estimation of :—

(*a*) Regularity;

(*b*) Nep;

and determination of :—

(*c*) Count;

(*d*) Twist;

(*e*) Lea strength;

(*f*) Single thread strength and extension.

In order to determine the relation which exists between the properties of a cotton and its spinning value, investigations have been planned for the determination of the properties of the fibre as well as of the yarn. These will include the determination of :—

(1) Dimensional properties; (2) elastic properties; (3) electrical and optical properties; (4) chemical properties and (5) yarn properties.

Considerable progress has been made towards providing the means for carrying out the investigations referred to above. Some details are therefore given of —

(1) Buildings;

(2) Equipment;

(3) Staff;

(4) Work of the Technological Laboratory.

Buildings.

The site for the Technological Laboratory is situated at King's Circle, Matunga, about eight miles to the north of the centre of the City. It lies in pleasant surroundings on land which is just being developed for residential purposes by the Bombay Improvement Trust. The site is less than 200 yards from the Victoria Jubilee Technical Institute. The plans of the Indian Central Cotton Committee contemplate the erection of two buildings on the plot of land secured, one to have installed within it an Experimental Spinning Plant, and the other to provide accommodation for a Research Laboratory. Already the building for the Spinning Laboratory has been erected ; the necessary plant has been installed and is now running satisfactorily. The building is a single storey brick building, rough cast on the outside ; the floor is paved and the roof constructed of reinforced concrete slab over steel beams and girders. The building is 24 feet high and has a total floor space of about 6,200 square feet. The western side of the building is occupied by a Cotton Sample Room having a floor space of 230 square feet, and a Blow Room having a floor space of 850 square feet. The central part of the building is occupied by the spinning room having a floor space of 3,450 square feet. On the eastern side are a testing room with a floor space of 750 square feet, and office and switchboard room with a floor space of 350 square feet, and a store room with a floor space of 400 square feet. Arrangements have been made to ensure that the light is for the most part a north light. The greater part of the lighting of the main spinning room is from the roof through windows forming the north side of a reinforced concrete erection having rectangular cross-section ; this is supplemented by light from a number of wall windows on the north side. The rooms on the eastern and western sides are lighted by means of windows on their outside walls.

Equipment

The Spinning Laboratory has been equipped on the basis of a 100-spindle plant. The bulk of the machinery has been supplied by Messrs. Tweedale and Smalleys, Ltd., Castleton (Lancs). The Blow Room machinery consists of —

(1) One Lattice Feeder ;

(2) One Crighton Opener ;

(3) One Hopper Feeder ;

(4) One Scutcher.

These machines are so connected as to enable a continuous flow of material to be maintained from the first to the last. The main spinning room contains the rest of the spinning machinery, in order along the western partition wall ;

(5) Two Revolving Flat Cards ;

(6) One set of Drawing Frames ;

(7) One Slubbing Frame ;

(8) One Intermediate Frame ;

(9) One Roving Frame ;

(10) Two Ring Frames (48 spindles each) ;

(11) One Self-acting Mule (194 spindles).

Located on the eastern partition wall is a Nasmith Combing Set consisting of —

(12) One Sliver Lap Machine.

(13) One Ribbon Lap Machine ;

(14) One Nasmith Comber Machine.

All the machinery is electrically driven by a power supply of 3-phase alternating current at 400 volts, supplied by the Bombay Electric Supply and Tramways Co., Ltd. The Blow Room machi-

nery is driven by three individual direct coupled motors, *viz.*, (1) 4 H. P. motor driving the Lattice Feeder, (2) 4 H. P. motor driving the Crighton Opener, and (3) 4 H. P. motor driving the Scutcher and Hopper Feeder. The spinning machinery in the main Spinning Room with the exception of one ring frame is groupdriven from a shaft which is turned by a 15 H. P. motor carried on a bracket on the South side of the building: the ring frame referred to is individually driven by a 1 H. P. variable speed motor. A separate 4 H. P. motor carried on a pillar against the Eastern partition wall turns the shaft from which the Combing Set is driven.

Testing Room.

The Testing Room has been fitted up and the usual equipment of a Testing Room has been installed. The following are in regular use :—

Goodbrand Single Thread Tester;
„ Lea Tester;
„ Wrap Reel;
„ Wrap Block;
„ Yarn Regularity Examiner;
Bær Conditioning Oven;
„ Twist Tester;
Cook's Lap Regularity Tester;
„ Moscrop Yarn Tester.

A contract has been placed with the Carrier Engineering Co., Ltd., for the installation of their Ventilating System of Humidification. When this has been completed it will be possible to standardise the conditions at which the spinning and the testing are carried out at all periods of the year, no matter what the prevailing external conditions may be.

Research Laboratory.

Early in the present year, plans were prepared for the second building of those referred to above, *viz.*, the Research Laboratory. A three-storied building has been designed for this purpose. The building is practically rectangular in shape to cover a ground area of 6,200 square feet approximately. The ground floor is to be entirely devoted to the laboratory. Besides various office rooms, there will be room for Physics, Chemistry, Microscopy and Colloids. Accommodation is also provided for a Library, a Workshop and a Store Room. For various reasons it has been deemed desirable to provide, above the laboratory, flats for the use of the Director, and the Spinning Master. The design is such that, in the event of future extension of the laboratory being considered necessary, it will be possible to make use of these flats for the purpose.

Tenders for the erection of the Research Laboratory were called for, and contracts were placed in August 1924. Building operations were to begin on 1st September (and actually were so begun) and the whole building was to be completed by the end of May 1925.

Pending the design and erection of the Committee's own Research Laboratory, the scientific work has been carried on in a room at the Victoria Jubilee Technical Institute, kindly placed at our disposal by the Trustees of that institution, as mentioned in last year's Annual Report. The floor space of the room available measures about 50 ft. by 30 ft. At the time of taking over this room it had no laboratory facilities or equipment. Arrangements were made for partitioning part of the room to serve as an office for the Director and also an office for the clerk and the typist; laboratory benches of special type were designed for the various branches of work to be undertaken, *viz.* Physical, Chemical and Microscopical; while provision was made for the supply of gas, electricity and water and for the drainage necessary in connection with the

water supply. It may be added that the laboratory benches in use both in the Research Laboratory and also in the Testing Room have been designed on the " Unit Principle" of Dr. Balls so that the varying needs of the laboratory may be accommodated at any time with the utmost economy and efficiency.

As regards the equipment of the Temporary Laboratory a certain number of instruments which had been used by the Cotton Specialist were available including the following :—

Two Microscopes ;

Dissecting Microscope ;

Schanze Microtome and accessories.

The Research Laboratory has been equipped with many of the most recent instruments which are likely to prove useful in the chemical, physical and microscopical investigation of cotton.

Staff.

The Director of the Technological Laboratory was appointed in October 1923, and he arrived in Bombay to take up his duty in January 1924. A Spinning Master was also appointed in January 1924, and since that time various additions have been made to the staff, including, besides office staff, a Chemist, Microscopist, Statistical Assistant, two Testing Assistants, Electrician, a Research Student for physical work, and various Operatives and Menials. The period which has elapsed since these appointments were made to the end of the year now under review, has been chiefly devoted to training the staff in the investigation of cotton fibres and yarns. The following is the present staff of the Technological Laboratory:—

Director : A. James Turner.

Temporary Spinning Master : E. B. Walmsley.

Chemist : D. L. Sen.

Microscopist: H. N. DUTT.

Testing Assistants: K. TARKUNDEY. P. MADHAVA RAO.

Statistician: V. VENKATRAMAN.

Electrician: K. S. VENKATRAM.

Physics Research Student: N. HARI RAO.

Clerk: N. A. GADRE.

Typist: B. P. JAIN.

COTTON BOLL WEEVIL.

In the Annual Report for last year reference was made to the possible danger of introducing the cotton boll weevil along with American cotton imported into India. In order to avoid the undesirable introduction of the boll weevil into this country even for experimental purposes, certain preliminary experiments have been made using various indigenous weevils, of which the most resistant has been found to be the grain weevil, Calendra. It has been found that it is necessary, in order to exterminate these grain weevils, to subject them to a concentration of about 150 parts of hydrocyanic acid gas per 100,000 parts of air for nearly 24 hours.

This concentration of such a poisonous gas is relatively a very high one, and its use without precaution might be attended with some danger. Experiments have accordingly been carried out to determine whether either the cotton or the gunny covering of a bale absorbs such a quantity of the hydrocyanic acid gas that when the bale is subsequently exposed to the air it may give off this gas in sufficient quantities to prove locally dangerous to men who have to handle the fumigated bales of cotton. The experiments which have been made tend to show that no danger from this source need be apprehended.

After due consideration of the various means for carrying out the fumigation on a large scale, it was concluded that the most satisfactory method would be to use a barge, specially assigned for the purpose, into which the bales of American cotton could be discharged from the vessel bringing them into port. The bales after fumigation could then be landed. A practical fumigation experiment was accordingly arranged for. 79 bales of American cotton were placed in a barge and suitably covered; hydrocyanic acid gas was generated and distributed through the hatch by the Liston fumigation apparatus. Unfortunately, it was not found possible to prevent a very large leakage of the gas, the concentration of which fell almost immediately to a degree which was innocuous to the weevils. Another experiment is being arranged in which it is hoped to achieve more satisfactory results.

Reference may also be made to certain experiments in which the vapour of formaldehyde was used as a weevil-killing agent. Although at first this vapour appeared to give better results than hydrocyanic acid gas, it was in fact afterwards found to be much less potent than the latter.

WORK OF THE TECHNOLOGICAL LABORATORY.

During the year under review the work of the Technological Laboratory has necessarily been chiefly of the nature of preparing the ground. In connection with the Spinning Plant, it has been practically restricted to the erection of the machinery and adjusting it to run satisfactorily. For the latter purpose material from a mill has been worked upon until results were obtained at least equal to those obtained in the mill. So far as the Research Laboratory is concerned most of the time has been taken up by the work of organisation and in the training of assistants in the methods of fibre and yarn testing and investigation, and also in the work on the fumigation experiment. The work in the immediate future

will be concentrated on investigations into the properties of a number of standard Indian cottons. For this purpose a supply of the following Indian cottons has been obtained :—

1. Kumpta (Dharwar No. 1).
2. Dharwar-American (Gadag No. 1).
3. Surat (1027 A.L.F.)
4. Punjab-American (285 F).
5. Punjab-American (289 F).
6. K. 22.
7. Cambodia (Cambodia 295).
8. Northerns (Sircar No. 14).
9. Westerns (Sircar No. 25).

It is proposed to make spinning tests on these cottons under various conditions and to compare the results obtained. The majority of these cottons are available both in the baled state and in the form of kapas, and investigations of their properties will also be made in the Research Laboratory. At the same time similar tests will be carried out on two standard American cottons, one a typical long staple and the other a typical short staple American cotton.

It is proposed to continue from year to year these tests on the above standard cottons, and on certain other cottons which were not available from the 1923-24 season's crop, *viz* :—

Cawnpore American	..	C.A. 9.
Bundelkhand ..	..	J.N. 1
Aligarh Cotton ..	..	A. 19
Aligarh White Flower.		

If these standard cottons are grown as far as possible under standard conditions each season the spinning and other tests carried out on them in the Technological Laboratory will provide information which should prove invaluable regarding the quality of the cottons and the changes produced therein by varying climatic conditions from one season to another. It will then be possible to issue each season a report on the quality of the different cottons, which will no doubt be a very useful complement to the information already published about the yield. When results have been obtained in this way for a number of seasons, a store of information will have been accumulated which will certainly be of use in a number of directions.

It has not been possible during the year now under review to make a start with the testing of new types of cotton grown by the various Agricultural Departments. It is expected, however, that the facilities of the Technological Laboratory will be available for this purpose at the beginning of 1925.

A. JAMES TURNER.

APPENDIX I.

FUNCTIONS OF THE COMMITTEE.

For reasons which we have explained below, we consider that the functions of the Committee should be almost entirely advisory and we would define them as follows :—

(*a*) It should advise both the Government of India and Local Governments in regard to any particular questions of cotton policy referred to it.

(*b*) It would recommend both to Government and the trade such measures as appeared to it suitable for safeguarding the existing areas of long staple cotton in the various provinces where these appeared to be endangered as well as for promoting and extending the cultivation of long staple cotton in new areas such as Sind and parts of the Punjab.

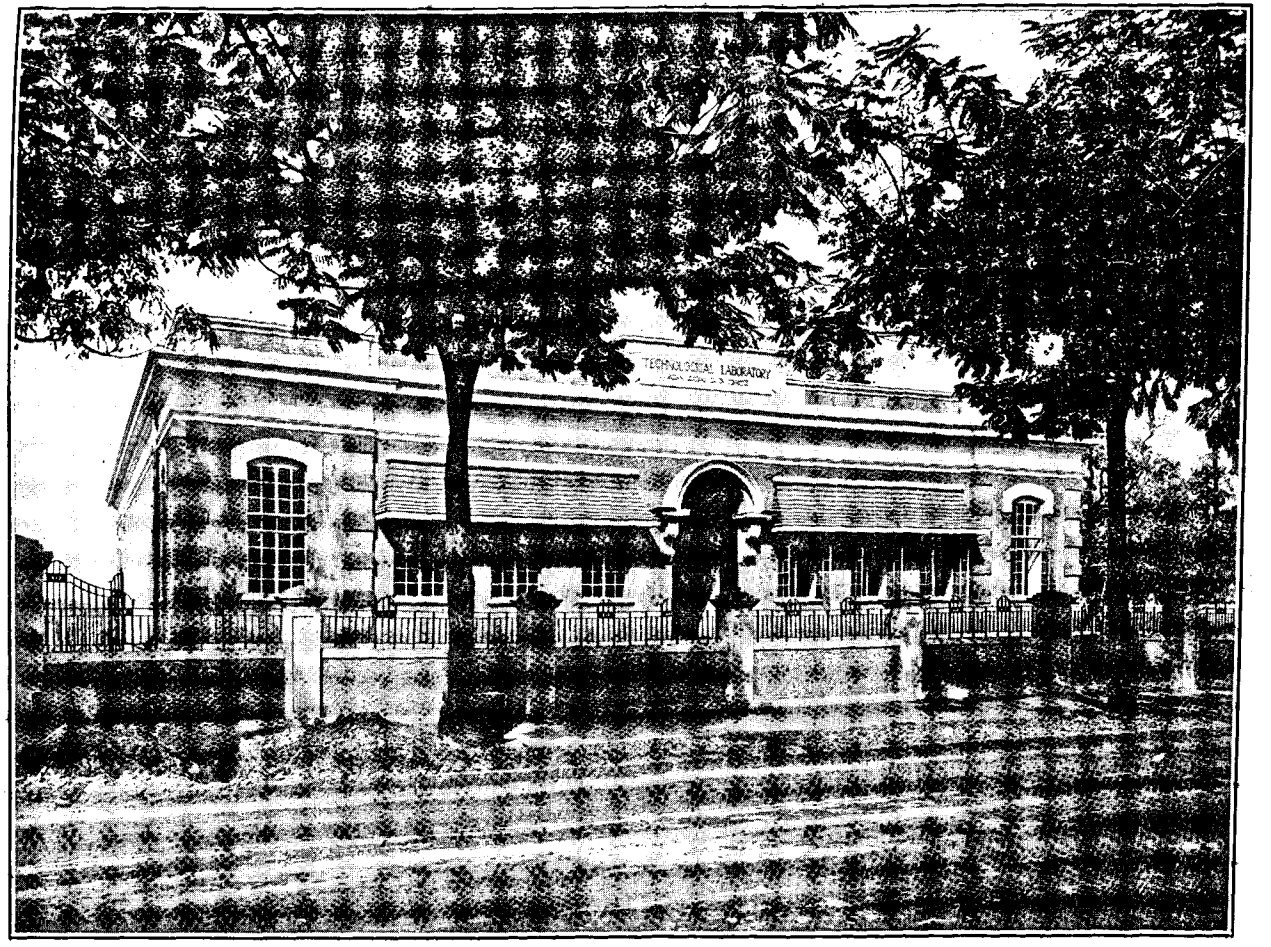
(*c*) It would bring to the notice of Government and the trade any changes in the conditions of the cotton growing tracts which may occur from time to time and suggest suitable measures to meet them.

(*d*) It would be consulted by Government in regard to legislation proposed on any matters connected with cotton. It would also be consulted in respect of any rules framed under any legislation in regard to such matters both by the Government of India or Local Governments.

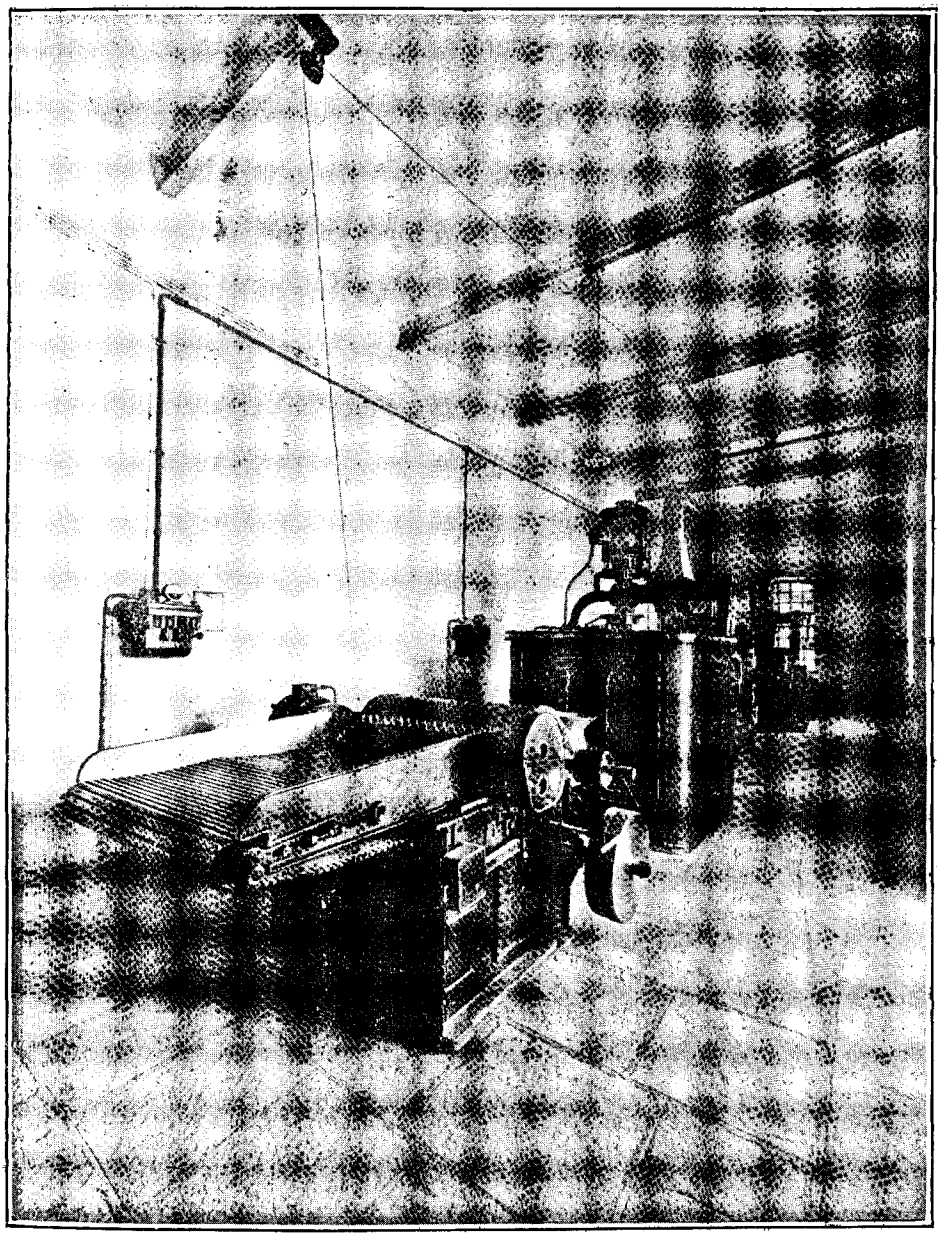
(*e*) In conjunction with the East India Cotton Association, the establishment of which we have dealt with in the previous chapter, it would deal with the question of the trade classifications of the different varieties of cotton.

(*f*) It would assist the Agricultural Departments of the various provinces to obtain authoritative valuations of new varieties of cotton and to get accurate spinning tests carried out.

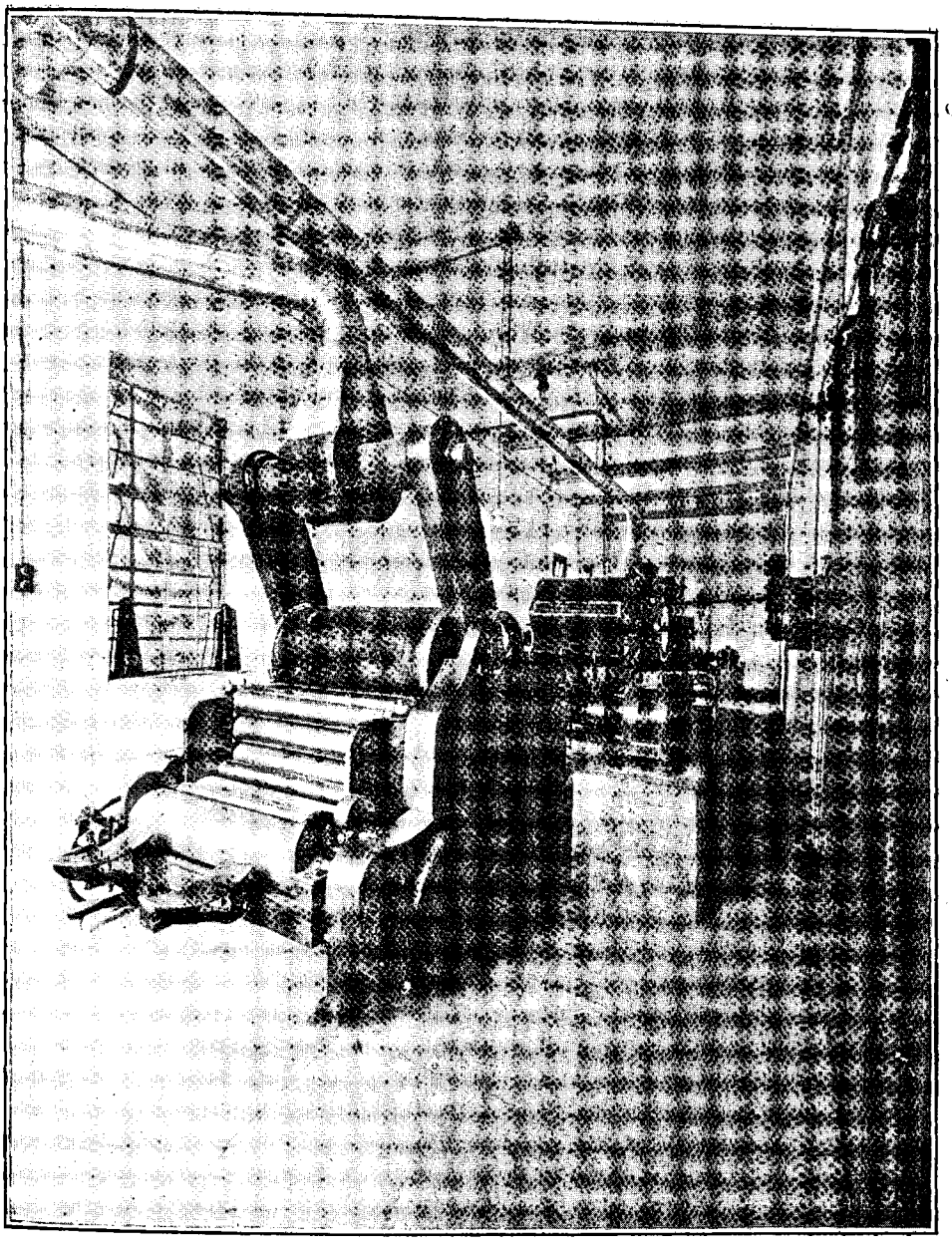
(*g*) It would keep in close touch with the Provincial and local Committees the formation of which we have suggested below, and would especially render them assistance, if required, in regard to the marketing of small quantities of new varieties.



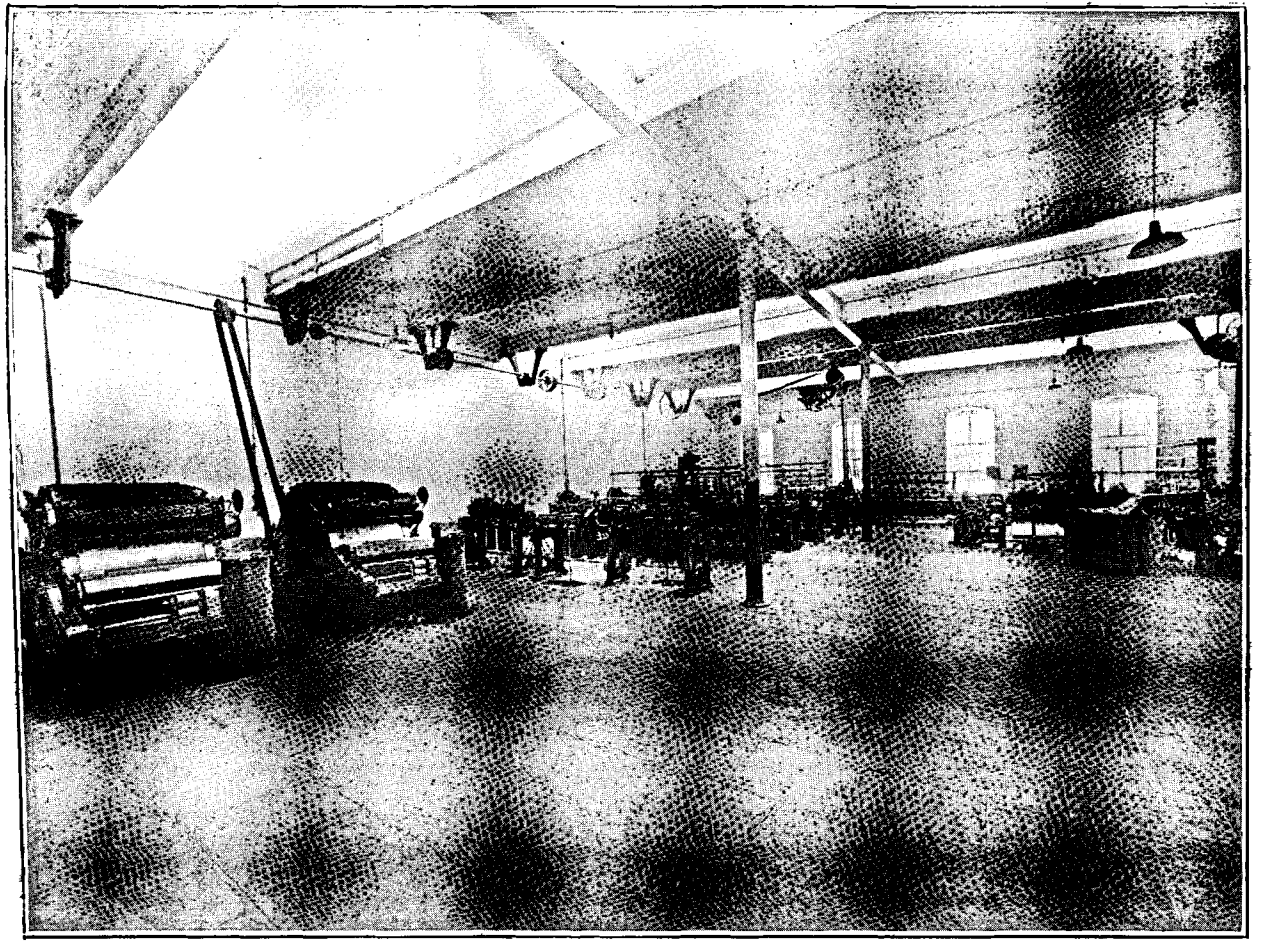
The Spinning Laboratory.



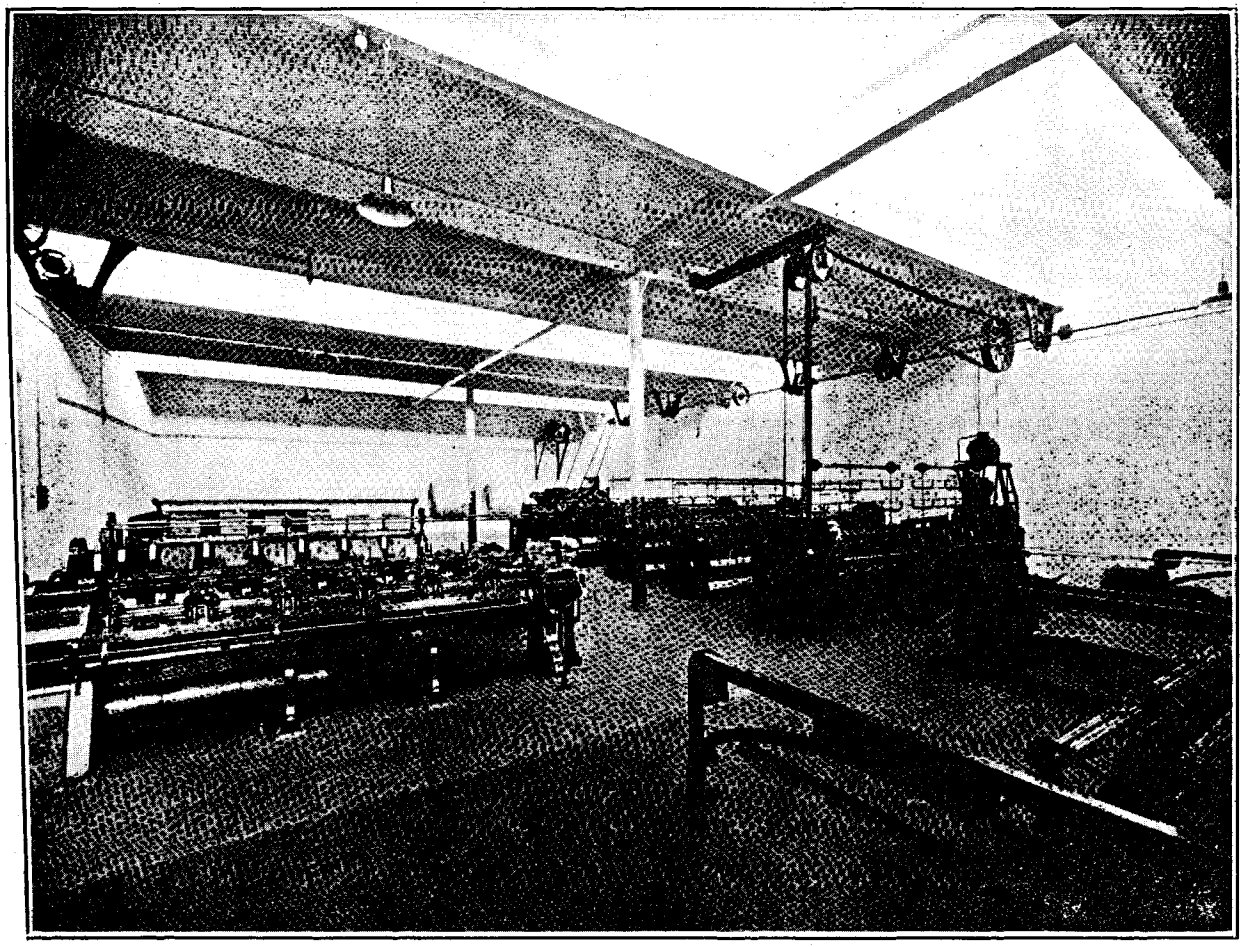
The Blow Room from the North end.



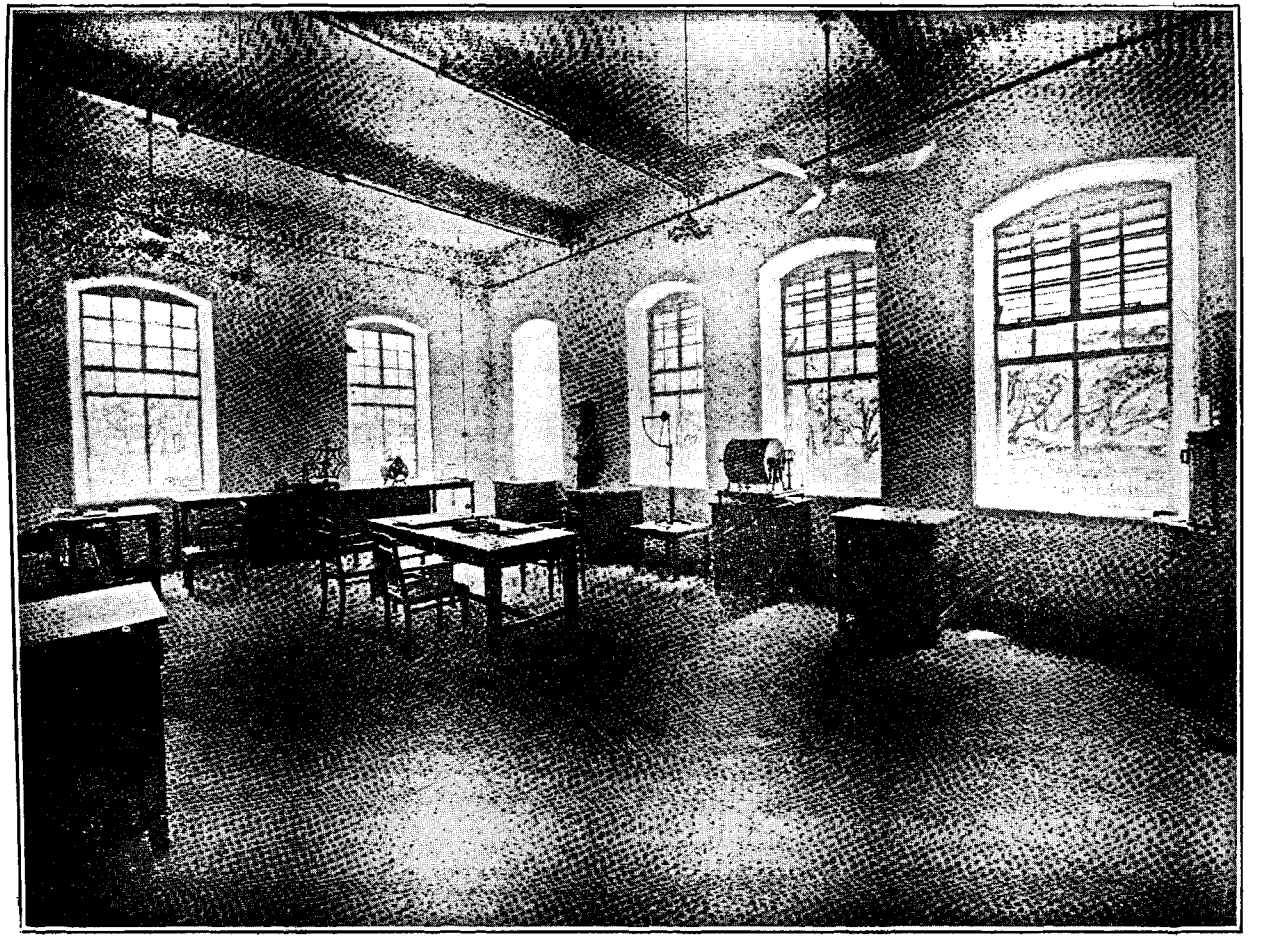
The Blow Room from the South end.



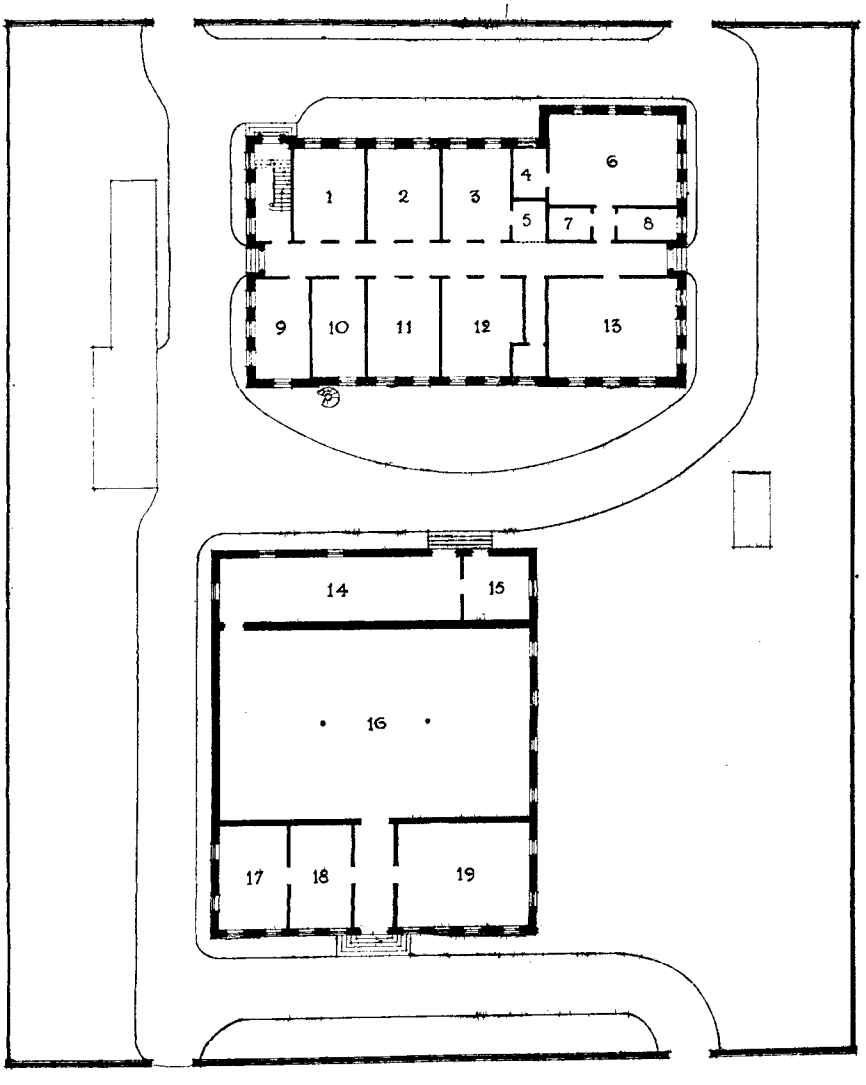
The Spinning Room from the South-East corner.



The Spinning Room from the North-East corner.



The Testing Room.



SCALE 10 5 0 10 20 30 40 50 60 70 80 90 OF FEET

RESEARCH LABORATORY

1 COLLOIDS
2 MICROSCOPY
3 GENERAL OFFICE
4 COMBUSTION Rm
5 WAITING ROOM
6 CHEMICAL LABY
7 DARK ROOM
8 BALANCE Rm
9 WORK SHOP
10 STORE
11 LIBRARY
12 DIRECTORS Rm
13 PHYSICS LABORATORY

SPINNING LABORATORY

14 BLOW ROOM
15 SAMPLE ROOM
16 MAIN SPINNING Rm
17 STORE ROOM
18 OFFICE
19 TESTING ROOM

D. W. Ditchburn

F.R.I.B.A.
MESSRS. W.A. CHAMBERS & CO.
ARCHITECTS
BOMBAY.

(*h*) It would make recommendations in regard to possible improvements in the forecasts and statistics relating to cotton. The statistical work in connection with cotton, such as the compilation and issue of forecasts, of ginning and pressing returns, and of figures relating to the movement of cotton, especially of shipment and local mill consumption, might, eventually, be handed over entirely to it.

(*i*) It would act as a bureau for the dissemination of information both in regard to the cotton of India and of other countries to Agricultural Departments and the trade generally, in India and throughout the Empire. To enable it to carry out this latter function, it would keep in close touch with the Empire Cotton Growing Committee and would also keep itself informed of developments in the other cotton growing countries of the world.

(*j*) One of its most important functions would be to advise Local Governments in regard to the withdrawal of licenses for ginning and pressing factories under the scheme proposed in Chapter XVI.

(*k*) Finally, it would publish an annual review of the general cotton position with special reference to the Indian cotton crop. We consider that a useful model for such a review would be the well known publication "Cotton Facts" published by the Shepperson Publishing Company of New York.

APPENDIX II.

HUZUR REVENUE DEPARTMENT,

MAHALANIHAYA SAR SUBA OFFICE,

(CHITNISHI BRANCH).

Notfication No. 7 ot St. 1980.

Subject.—Notification issued under Sub-sections 1 and 2 of section 4 of the State Cotton Transport Restriction Act.

Whereas it is expedient to adopt measures for the purpose of maintaining the quality and reputation of the cotton grown in certain areas in the State mentioned in Schedule I hereto appended, in exercise of the powers conferred by Sub-sections 1 and 2 of Section 4 of the State Cotton Transport Restriction Act of St. 1980 it is hereby directed with the previous sanction of the Huzur that—

(*a*) Import of cotton into areas mentioned in Schedule I is prohibited save under and in accordance with the conditions of a license prescribed in the rules issued under the said Act.

(*b*) The delivery to and the taking of delivery by any person at any of the Railway Stations specified in Schedule II hereto appended, of any cotton when such cotton has been consigned from a Railway Station not situated in the areas mentioned in Schedule I is prohibited unless such person holds the prescribed license for the import of cotton into the said areas.

This Notification will come into force with effect from the date of its publication in the Adnyapatrika 12th January 1924.

(Sd.) ANANT NARAYAN DATAR,

Mahalanihaya Sar Suba.

SCHEDULE I.

I. The South Surat Area.

This area consists of that portion of the Navsari District which is lying between the Par river on the South and on the North the Mindhola river upto the eastern end of the Palsana Taluka and thence that part of the Purna river lying East of the Mahuva Taluka upto the point where it meets the Vyara-Khambhalia road and bounded on the East by the Vyara-Khambhalia road and on the West by the sea; that is to say this area comprises the whole of the Navsari, Gandevi and Mahuva Talukas of the State and a part of the Vyara Taluka lying between the Purna river and the Vyara-Khambhalia road.

II. The Surat Area.

This area consists of that portion of the Navsari District which is bounded on the West by the sea, on the East by the boundary of the Mandurbar, Navapura and Pimpalner Talukas of the British District of West Khandesh touching the boundary of the Vajpur and Songhad Talukas of this State, on the North by the Tapti river and on the South the Mindhola river upto the eastern end of the Palsana Taluka and thence by that portion of the Purna river lying on the East of the Mahuva Taluka upto the point where it meets the Vyara-Khambhalia road and thence the Vyara-Khambhalia road and the boundary of the Bansda and Dang States, that is to say this area comprises the whole of the Palsana and Songhad Talukas, that part of the Vyara Taluka which is not included in the South Surat area and a part of the Kamrej Taluka lying to the South of the river Tapti.

Note.—The portion of the Vajpur Peta Mahal lying on the East of the river Tapti known as the Nesu tract is not to be considered as included in any of the protected areas.

III. The Olpad-Ankleshwar Area.

This area consists of that portion of the Navsari District which is bounded on the North by the river Narbada, on the South and East by the river Tapti and on the West by the sea, that is to say this area comprises the whole of the Mangrol Mahal and of the Umarpada Peta Mahal and portions of the Vajpur Peta Mahal and of the Kamrej Mahal lying to the North of the river Tapti.

SCHEDULE II.

Railway Stations included in the protected areas.

I. SOUTH SURAT AREA :—

Billimora, Gandevi, Kalvach, Chikhali Road, Anaval, Rankuva, Dholikuva, Unai, Kevdi Road and Kalaamba.

II. THE OLPAD-ANKLESHWAR AREA :—

Kosamba, Velachha, Simodra, Mangrol, Vankal and Jankhvav.

APPENDIX III.

GOVERNMENT OF INDIA.

LEGISLATIVE DEPARTMENT.

The following Bill was introduced in the Legislative Assembly on the 3rd September 1924 :—

No. 27 of 1924.

A Bill to provide for the better regulation of cotton ginning and cotton pressing factories.

Whereas it is expedient to provide for the better regulation of cotton ginning and cotton pressing factories; it is hereby enacted as follows :—

Short title, extent and commencement.

1. (1) This Act may be called the Cotton Ginning and Pressing Factories Act, 192 .

(2) It extends to the whole of British India (except Burma), including British Baluchistan and the Sonthal Parganas.

(3) It shall come into force on such date as the Governor-General in Council may, by notification in the *Gazette of India*, appoint.

Definations.

2. In this Act, unless there is anything repugnant in the subject or context :—

(*a*) " bale " means any pressed package of cotton of whatever size or density ;

(*b*) " cotton " means ginned or unginned cotton, cotton waste or cotton seed ;

(*c*) " cotton ginning factory " means any place where cotton is ginned or where cotton fibre is separated from cotton seed by any process whatever involving the use of steam, water or other mechanical power or of electrical power ;

XII of 1911.

(*d*) " cotton pressing factory " means any factory as defined in the Indian Factories Act, 1911, in which cotton is pressed into bales ;

(*e*) " cotton waste " means droppings, strippings, fly and other waste products of a cotton mill or of a cotton ginning factory or of a cotton pressing factory, but does not include yarn waste ;

XIV of 1923.

(*f*) " Indian Central Cotton Committee " means the Indian Central Cotton Committee constituted under the Indian Cotton Cess Act, 1923, and includes any Sub-committee appointed by it to perform any function of the Indian Central Cotton Committee under this Act ; and

(*g*) " prescribed " means prescribed by or under rules made under this Act.

Maintenance of registers.

3. (1) The owner of every cotton ginning factory shall cause to be maintained at the factory in such form, if any, as may be prescribed, a ginning register containing a daily record of all cotton ginned in the factory and of the names of the persons for whom the cotton has been ginned and of the amount ginned for each person.

(2) The owner of every cotton pressing factory shall cause to be maintained at the factory in such form, if any, as may be prescribed, a press register containing a daily record of the number of bales pressed in the factory, the serial number of each bale, and the name of the person for whom it has been pressed.

(3) The owner or the person in charge of a cotton ginning or cotton pressing factory shall be bound to produce any ginning register press register maintained under this section when required to do so by any person appointed by the Local Government in this behalf, and the owner or person in charge of any cotton pressing factory shall be bound to furnish to the Indian Central Cotton Committee, if so required by it in writing, a copy, certified as correct by the owner or person in charge of the factory, of the entry in any press register maintained at the factory relating to any specified bale.

(4) No register required to be maintained by this section shall be destroyed until after the expiration of three years from the date of the last entry therein.

(5) If—

(*a*) in any factory any register required by this section to be maintained is not maintained or is maintained in any form other than the form, if any, prescribed for the purpose, or

(*b*) any entry in any such register is proved to be false in any material particular, or

(*c*) any such register is destroyed before the expiration of the period referred to in sub-section (4),

the owner of the factory shall be punishable with fine which may extend to fifty rupees or, if he has previously been convicted of any offence under this sub-section, to five hundred rupees.

(6) If the owner or the person in charge of any factory fails to produce any register, or to furnish a certified copy of any entry, when required to do so under sub-section (3), or furnishes a certified copy of an entry knowing or having reason to believe such copy to be false, he shall be punishable with fine which may extend to fifty rupees or, if he has previously been convicted of any offence under this sub-section, to five hundred rupees.

Marking of bales.

4. (1) The owner of every cotton pressing factory shall cause every bale pressed in the factory to be marked in such manner as may be prescribed, before it is removed from the press-house, with a serial number and with the mark prescribed for the factory.

(2) If any bale is removed from the press-house of any cotton pressing factory without having been marked as required by sub-section (1), the owner of the factory shall be punishable with fine which may extend to fifty rupees.

Returns.

5. (1) The owner of every cotton pressing factory shall submit to the prescribed authority, on such dates and in such form as may be prescribed, weekly and annual returns showing the total number of bales of cotton pressed during the preceding week and the preceding year respectively, and the approximate net weight of each bale.

(2) The Local Government shall compile from the weekly and annual returns, and shall publish in such manner as the Governor-General in Council may direct, a statement showing the total number of bales pressed in the province during the week and year, respectively, to which the returns relate:

Provided that the number of bales pressed in any individual factory shall not be published.

(3) If default is made in submitting any return as required by sub-section (1), the owner of the factory shall be punishable with fine which may extend to one hundred rupees.

Scales and weights.

6. (1) No scales or weights shall be used in any cotton ginning or cotton pressing factory other than the scales or weights, if any, prescribed by the Local Government as standard for the district in which the factory is situated.

(2) If in any factory any scale or weight is used in contravention of the provisions of sub-section (1), the owner of the factory shall be punishable with fine which may extend to fifty rupees or, in the case of any second or subsequent offence, to five hundred rupees.

Structural requirements for factories.

7. (1) In the case of all cotton ginning factories the construction of which is commenced after the commencement of this Act:—

(*a*) gin-houses shall be provided with separate entrances and exits for the bringing in of unginned and the taking out of ginned cotton respectively, and

(*b*) the factories shall be constructed in accordance with plans and specifications approved by the prescribed authority.

(2) Within such period after the commencement of this Act as may be prescribed, the owner of every cotton pressing factory in which cotton is handled on the ground floor shall cause the press-house to be paved or provided with other suitable flooring to the satisfaction of the prescribed authority.

(3) If the owner of any factory fails to comply with any provision of this section which is applicable to the factory, he shall be punishable with fine which may extend to one hundred rupees and in the case of a continuing offence, with an additional fine which, may extend to fifty rupees for each day after the first during which the failure continues.

Liability of officers of a company.

8. Where the person guilty of an offence under this Act is a company, every director, manager, secretary and other officer thereof who is knowingly a party to the default shall also be guilty of the like offence and liable to the like punishment.

Cognizance of offences.

9. (1) No prosecution under this Act shall be instituted except by or with the previous sanction of the District Magistrate or an Inspector or Factories appointed under the Indian Factories Act, 1911. XII of 1911.

(2) No offence punishable under this Act or under any rule thereunder shall be tried by any Court inferior to that of a Presidency Magistrate or of a Magistrate of the First Class.

Power of the Governor General in Council to make rules.

10. The Governor-General in Council may make rules to provide for—

(*a*) the allotment of a special mark to be used by each pressing factory for the purpose or the marking of bales ;

(*b*) the manner in which bales shall be marked ; and

(*c*) the manner in which the weekly and annual statements referred to in section 5 shall be published.

Power of the Local Government to make rules.

11. (1) The Local Government may, by notification in the Local Official Gazette, make rules consistent with this Act, to provide for all or any of the following matters , namely :—

(*a*) the forms in which registers, records and returns are to be maintained or submitted, and the verification of records and the inspection of registers ;

(*b*) the appointment of the authority to whom and the dates on which the returns required by section 5 shall be made.

(*c*) the weights and scales to be used in cotton ginning and cotton pressing factories in any district in the province, and the inspection of the same ;

(*d*) the appointment of authorities for the purposes of section 7 ;

(*e*) the powers of entry and inspection which may be exercised by District Magistrates and Inspectors of Factories in the case of cotton ginning factories which are not factories within the meaning of the Indian Factories Act, 1911 ; and

XII of 1911. (*f*) any other matter which is to be or may be prescribed or for which provision is necessary in order to carry out the purposes of this Act.

(2) Rules made under this section may provide that any contravention thereof or of any order issued under the authority of any such rule shall be punishable with fine which may extend to one hundred rupees.

Power to reject unmarked bales in fulfilment of contracts.

12. After the expiration of one year from the commencement of this Act, any person who has made a contract for the purchase of baled cotton may require that no bales other than bales marked in accordance with section 3 shall be supplied in fulfilment of such contract, and, if he does so require, no bale not so marked shall be tenderable in fulfilment of the contract :

Provided that nothing in this section shall apply to a contract for the sale and delivery of cotton grown before, or less than one year after, the commencement of this Act.

Protection for acts done under Act.

13. No suit or other legal proceeding shall be instituted against any person in respect of anything which is in good faith done or intended to be done under this Act.

STATEMENT OF OBJECTS AND REASONS.

The Indian Cotton Committee which was appointed in 1917, in Chapter XVI of their Report recommended certain measures, including the licensing of cotton ginning and pressing factories, to prevent such malpractices as damping, mixing and adulteration, which are injurious to the quality and reputation of Indian cotton. The recommendations of the Committee , however, involved an excessive amount of official interference. The object of the present Bill is to put the trade in a position to protect itself by providing for the marking of bales and the record of ownership, and by providing further that unmarked bales are not tenderable in fulfilment of a contract, if marked bales are demanded by the purchaser.

The Bill also makes provision for the maintenance of registers for statistical returns, for the use of correct scales and weights, and for the structural improvement of ginning and pressing factories. The Bill is based on the recommendations of the Indian Central Cotton Committee, and is supplementary to the Cotton Transport Act, 1923.

The 28th August, 1924. C. A. INNES.

H. MONCRIEFF SMITH,
Secy. to the Govt. of India.

APPENDIX IV.

CLEAN COTTON PICKING.

MADRAS PRESIDENCY.

"TINNEVELLIES" TRACT.

	Ryots' lands.	Koilpatti Farm.	Cotton field-picked clean (ideal).
Yield per acre kapas	315 lb.	466 lb.	315 lb.
Cost of picking an acre—			
	Rs. a. p.	Rs. a. p.	Rs. a. p.
In kind	8 6 4*	....	....
In cash	....	9 6 4†	9 15 6‡

COIMBATORE DISTRICT (TIRUPPUR CAMBODIA COTTON).

	Ryot's lands.	On seed Farms and at seed Farm godowns.
Yield per acre kapas	1,000 lb.	975 lb. (*a*) (Clean) + 25 lb. (stained).
	Rs. a. p.	Rs. a. p.
Value of yield per acre	280 0 0 (*b*)	282 9 8 (*c*)
Cost of picking an acre yield	7 8 0 (*d*)	8 8 0 (*e*)

---

*Value of 1-9 of the produce or 35 lb. of kapas at Rs. 60 per pothie of 259 lb. Wages usually vary from 1–16 to ¼ of the produce.

†Rs. 1-8-0 out of this amount is paid to pick off stained kapas from bulk pickings.

‡Rs. 8-6-4 *plus* extra picking charges at Rs. 1-4 per pothie of 250 lb.

(*a*) 1,000 lb. of ordinary kapas yield 975 lb. clean when stained cotton is picked out.

(*b*) At Rs. 70 per pothie of 250 lb.

		Rs. a. p.
(*c*)	975 lb. clean kapas at Rs. 72 per pothie (premium of Rs. 2 per pothie) ..	280 12 10
	25 lb. stained kapas at 18 rupees per pothie	1 12 10
(*d*)	3 women at 4 annas on 8 occasions	6 0 0
	3 men at 8 annas for 3 seasons (for damping etc.)	1 8 0
(*e*)	Cost of picking as in (*d*)	7 8 0
	Cost of picking stained kapas at 4 annas per pothie	1 0 0

Lands near Coimbatore and Central Farm.

	Ryots' lands.	Central Farm.
Acre yield (Cambodia)	1,000 lb.	1,000 lb.
Do. (Uppam)	500 lb.	500 lb.
Cost of picking an acre yield—		
	Rs. a. p.	Rs. a. p.
In kind	16 8 0 (*a*)	....
In cash	....	21 0 0 (*b*)

Northerns and Westerns—Cotton Specialist's estimate.

	Ryots' lands.	Clean picked field (assumed).
Yield per acre (kapas)	300 lb.	300 lb.
Cost of picking—		
	Rs. a. p.	Rs. a. p.
Ordinary	5 0 0 (*c*)	....
Clean	....	9 6 0 (*d*)
Difference in blow-room loss	10 per cent.	....

Northerns and Westerns—Deputy Director's estimate.

	Hagari Farm.	Ryots' lands.	Clean picked field (assumed).
Yield per acre (kapas)	250	250	....
Ginning per cent	25.9	27.6	....
Lint yield per acre (lb.)	64.75	69	....
Blow-room loss, the yield of an acre.. per cent.	8.80	11.35	....
Blow-room loss, the yield of an acre.. lb.	5.70	7.80	....
Difference	....	2.10 lb.	....
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Cost of picking an acre	3 13 0(*e*)	5 0 0(*f*)	6 10 8(*g*)

(*a*) Value of 75 lb. kapas at Rs. 55 per pothie of 250 lb. 75 lb. is calculated at 7½ per cent. of the yield for Cambodia, and 15 per cent. for Uppam.

(*b*) At 4 annas per cooly for 84 coolies. Each cooly can pick 12 lb. of Cambodia or 6 lb. of Uppam.

(*c*) Payment in kapas (25 lb. at 5 lb. a rupee).

(*d*) Daily wages at 6 pies per lb.

(*e*) The charges of the farm are less than on ryots' lands. The farm is able to get labour cheaper as it provides work and wages all the year round.

(*f*) The value of 37½ lb. of kapas, a share varying from ⅛ to 1–12 of the produce.

(*g*) The value of 50 lb. of kapas as only ¾th of the present quantity of kapas can be picked, if this is done clean.

PUNJAB.

LYALLPUR CIRCLE (1923).

	Ordinary Method.	Clean picking.	Difference.	Stained cotton and dirt eliminated per 100 lbs. kapas.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	
(a) Desi	2 12 0	4 4 0	1 8 0	3 lbs.
(b) American ..	2 0 0	3 0 0	1 0 0	1 lb.

(a) Value of 3 lbs. of Desi at Rs. 18 per maund=Re. 0-10-6.

(b) Value of 1 lb. of American at Rs. 24 per maund=Re. 0-4-9.

For cleaner picked Desi, the farmer would have required an addition of Rs. 1-8-0 *plus* 0-10-6=Rs. 2-2-6 per 100 lbs. *Kapas*, and for cleaner picked American Re. 1 *plus* 0-4-9=Rs. 1-4-9 per 100 lbs. of *Kapas*.

For Gurdaspur Circle.—It is estimated that the farmer would have required an addition of Rs. 1-15-3 per 100 lbs. of *Desi Kapas* and Rs. 1-15-5 per 100 lbs. of *American Kapas*.

APPENDIX V.

LIST OF EXHIBITS.

(*a*) Baled Cotton (Opened bales).

(1) Surat-Navsari.
(2) Dharwar No. 1.
(3) Gadag No. 1.
(4) Wagyi.
(5) Coconada.
(6) Sircar No. 14.
(7) Ordinary Northerns.
(8) Sircar No. 25.
(9) Ordinary Cambodia.
(10) Cambodia Strain 295.
(11) Uppam.
(12) Karunganni (Company No. 3.)
(13) Ordinary Tinny.
(14) Punjab-American 4 F.
(15) Punjab-American 285 F.
(16) Punjab-American 289 F.
(17) K. 22 (Dr. Leake's Hybrid.)
(18) Jalaun No. 1.
(19) Aligarh No. 19.
(20) Berar.
(21) C. P. No. 1.
(22) Hyderabad Gaorani.
(23) Octopus bale (Ordinary Tinny.)

(*b*) Ginned cotton, unginned cotton, combed seeds mounted on ruled black cards to show the stapled and card sliver of all the commercial samples, and promising new cottons under trial, and open bolls of a few of these.

(*c*) Herbarium Sheets, coloured plates and photographs of types of Indian cotton, photographs of cotton fields, and photographs of "Sorter" diagrams.

(*d*) Diagrams , charts and graphs to illustrate :

(1) the area under American cotton in the Punjab, the area under cotton in the Punjab and Delhi and the export of raw cotton from the Punjab.

(2) the world's cotton production, the Indian Cotton statistics and the classification of Indian Cotton by varieties.

(3) the loss of crop by bud and boll shedding in Madras.

(4) harvesting and picking times.

(5) staple.

(6) the insect pests of cotton in India.

(*e*) Maps showing :—

(1) the density of cotton cultivation by districts in India, in the Central Provinces, and in the United Provinces.

(2) the different varieties of cotton grown by districts in India in the Central Provinces and in Madras.

(3) the cotton growing area in relation to canal irrigation area in the Punjab.

(4) the present and the expected additional area suitable for cotton under the Sukkur Barrage Scheme in Sind.

(*f*) A complete set of the Bombay arbitration standards (for grade).

APPENDIX VI. Research Students.

Name.	Province.	Age.	Degree.	University and years.	Other qualifications.	Where posted.	Remarks.
				COTTON BREEDING.			
I. Banerji	Bengal	25	M. Sc. Botany, 1st Class 1922; Honours in Botany at B.Sc., 1920.	Calcutta 1915-1922 (Presidency College.)	Research Student, Botanical Section, Pusa, 1922 to date.	Madras (Coimbatore.)	
B. B. Desai	Bombay	23¾	B. Ag (2nd Class), 1922; (1st Class Honours at Junior B. Ag. Examn.) Specialised cotton.	Bombay Agricultural College, Poona, 1919-22.	Worked at cotton breeding under Mr. Patel, Surat.	Bombay (Dharwar).	
Sheo. Shanker Pande ..	Central Provinces ..	25	M.Sc. Botany 1923 B. Sc., Biology group 1921.	Punjab Government College, 1921-23, Allahabad. Agra College, 1917-21.	Published Thesis on Marsilia erosa for M. Sc.	Central Provinces (Nagpur.)	
Mohammed Afzal ..	Punjab	21	B. Sc. (Agri.) 1923, Gold Medal,	Punjab Agricultural College, 1919-23.	....	Punjab, Lyallpur.	
				ENTOMOLOGY.			
Sohan Singh Bindra ..	Punjab	24	M. Sc., 1923, in Zoology by research, Honours in Zoology at B. Sc., 1922.	Punjab Government College, Lahore, 1917-23.	Published two papers on research done.	Punjab, Lyallpur.	
Nangpal Harbhagwandas	Punjab	22	B. Sc., (Hons.) Zoology. 1923.	Punjab 1917-23, Government College, Lahore.	Research on Metamorphosis of Wasp.	United Provinces (Cawnpore.)	
				MYCOLOGY.			
Jiwan Singh	Punjab	22	M. Sc., 1923, in Botany.	Punjab Khalsa College, 1919-21, Government College, Lahore, 1921-23.	Some research work during M. Sc. (two years) course.	Central Provinces.	
				BOTANY.			
Atul Chandra Datta ..	Bengal	About 25	M. Sc., 1st Class Botany, and top of the list in 1st Class Hons. at B. Sc. 1920.	Calcutta Presidency College to 1920. University Science College, 1920-22.	Research student under Dr. Bruhl. Joint author papers on plant diseases (Miliola) and on Water Hyacinth.	Madras (Coimbatore.)	
Sant Bahadur Singh ..	United Provinces ..	23	B. Sc., (2nd Class), Botany, 1921.	Allahabad, Benares, 1922-24 (St. John's College, Agra, 1917-21).	Research work in plant Physiology on growth of cotton plant. Joint paper with Prof. Inamdar on this subject for Science Congress.	Bombay ..	Since resigned.
				TEXTILE PHYSICS.			
				(One scholarship to be reserved for Burma.)			
N. Hari Rao	Madras	25	M. Sc. in Physics, 1st Class	Calcutta University, 1921-23.	....	Technological Research Laboratory, Bombay.	

APPENDIX VII.

PROGRESS IN THE INTRODUCTION OF IMPROVED VARIETIES OF COTTON IN VARIOUS PROVINCES.

Bombay.

A pure Navsari type of cotton is now almost entirely grown in the areas south of the Nerbudda, and the reputation of "Farm Cotton" is now firmly established all over this tract. The Rajpipla State is entirely sown with this type, and the Baroda districts are rapidly following into line. Provision has been made to prevent the cotton in this area again becoming impure by the application of the Cotton Transport Act to it. Three areas have been scheduled, in agreement with the Indian States concerned, namely, the "South Surat area," with Navsari as its chief mart with the best staple, the "Surat area" with Surat as its main centre, which extends northward as far as the Tapti river, and the "Olpad Ankleshwar area" which includes all the country between the Tapti and the Nerbudda rivers.

The area of special seed farms supervised by the Agricultural Department in this area was 9,000 acres, and seed for 175,000 acres was again distributed. Local Co-operative Societies are developing fairly rapidly and six of these, each of which supplies pure improved seed, are now working.

Work in the rehabilitation of the cotton to the north of the Nerbudda has not been done in the same systematic way, though the pure seed supplied by the Agricultural Department has gone considerably into use. Generally speaking, however, the cultivators demand a higher ginning percentage in the kapas than any of the pure types of the Agricultural Department can give. A type which appears to combine all the qualities needed is now being multiplied in the Surat farm, and in a year or two will, it is hoped, be available in large enough quantity to distribute in the Broach district north of the Nerbudda.

In the Northern Gujarat (Dhollera) area, several pure types of Wagad cotton, of high yield, quality and ginning percentage have now been evolved, and are now being multiplied in the neighbour-

hood of Viramgaon. These have been fully approved of by Viramgaon millowners, and in a year or two will, if all is well, be in hand in sufficient quantity for wide distribution.

The growth of improved types of Kumpta and Dharwar American varieties locally known as selected Kumpta (Dharwar No. 1) and Upland (Gadag No. 1) is rapidly extending round Hubli and Gadag respectively.

The Agricultural Department continues to supervise the pedigree seed farms and has further been able to establish two blocks of 5,000 acres each in compact areas one, for Dharwar No. 1 at and round Sharewadi near Hubli and the other for Gadag No. 1 at and round Hulkoti near Gadag. The produce of the pedigree seed farms is sold through the Cotton Sale Societies at Hubli and Gadag, ginned under close supervision of the cotton staff and seed given to these two blocks of 5,000 acres each. The produce of these two blocks is also sold separately through the Sale Societies, ginned under supervision, and seed stocked for general distribution.

Dharwar No. 1 cotton is gradually extending from Hubli to Haveri taluka and Gadag No. 1 from Gadag to Bijapur area. Results of Gadag No. 1 cotton as a Mungari crop in Bijapur, Indi and Shindgi talukas have been very encouraging and demand for seed has suddenly risen. It is hoped that area under this cotton will considerably increase during the next season in Bijapur district. The area under Dharwar No. 3 (Kumpta Cross) cotton continues to be limited. The total area under these three varieties actually sown with seed of known purity reached figures as follows :—

Kumpta Selected (Dharwar No.1)..	74,963
Upland (Gadag No. 1)	65,044
Kumpta Cross (Dharwar No. 3) ..	5,040
	1,45,047

The Sale Societies at Hubli and Gadag arrange periodical auction sales and the improved varieties of cotton coming to auction sales are graded by the cotton staff of the Department on the basis of cleanliness and ginning percentage. The method of grading

has attracted the attention of millowners and exporters and has induced them to offer high prices in auction sales and the cultivators encouraged by these high prices are bringing their cotton to these Sale Societies. A new Sale Society was opened at Bijapur which seems to have great future since a good deal of Upland cotton seed has been distributed in the area.

The cotton clean picking propaganda was continued by the District staff and Cotton Sale Societies and prizes were awarded in the auction sales. This will have its effects on cultivators in picking their cotton clean during the next season.

The Cotton Transport Act has been applied to the whole area in the Southern Division and has worked very satisfactorily on the whole. The import of inferior cottons like Bengal and Irani and mill waste through rails has altogether been stopped and the quality of both Kumpta and Dharwar American cottons has considerably improved. Import of slightly inferior cottons from Nizam's Dominions, Madras Presidency and Bagalkot area did take place to a certain extent on Gadag Market and short stapled Sholapur cotton in Bijapur market over roads.

Upland cotton fetched extraordinarily good prices in Bombay market during the year and middle men mixed it with Dharwar American cotton in Gadag and Hubli markets. Nothing can be done so long as both these cottons are grown side by side in the same area. It is hoped, however, that Upland cotton will soon spread over the whole area of Dharwar American cotton and the question of mixing these two will disappear.

As regards Dharwar No.1 cotton its advantages over ordinary Kumpta cotton are limited, and efforts are being made to increase its yield as well as ginning percentage by crossing. One cross has already yielded pure strains possessing all desired characters and will be ready for cultivation on a field scale during the next season.

In Khandesh the general wide distribution of pure " Roseum " or " N.R." cotton seed has been continued, and is now multiplied by alarge number of registered seed growers, seed unions and agricultural associations. All their production is under the general supervision of the Agricultural Department and they furnish seed for 30,000 acres. This organisation has been much extended and

perfected during the year. A beginning has also been made in the multiplication of some new types of seed, which combine the high yield and ginning percentage of N. R. Cotton with a much improved staple. It will be at least two years, however, before these will be available on a large enough scale to affect the usual type of cotton marketed in Khandesh.

Baroda State.

The important cotton growing areas of the Baroda State are much interlaced with those dealt with by the Bombay Department of Agriculture in the course of its operations in Surat. During the previous season an intense programme was maintained for covering as large an area with improved cotton as possible and the efforts have borne fruit since the people have now begun to recognise the superiority of this type, 1,027 A. L. F., and in many cases have reserved their own seed. The special seed area has now been discontinued as unnecessary. This improved cotton has now spread far and wide in the South Nerbudda Zone.

The Zones are settled in consultation with the Bombay Department and thorough co-operation was maintained wherever necessary.

A small advance test was made at Miyagam to see if Broach could be replaced in this area by an improved variety, but the results showed a lower yield per acre as well as lower ginning, percentage although the quality was superior.

Hyderabad.

There are two varieties of improved cotton in the Hyderabad State, *viz.*, Hyderabad Gaorani (G. Indicum-Lamk) and Western (G. Herbaceum).

The crops are estimated at 500,000 and 23,000 bales respectively last season (1923-24). The Department of Agriculture has continued its important successful operation for replacement of mixed cottons by valuable Bani (Hyd : Gaorani) type and for the maintenance of the latter in a state of purity which is indigenous to the Maharatwara tract of the dominion of Hyderabad. By the exertion of the Hyderabad Agricultural Department, the two administrative districts Nander and Parbhani have been covered with pure Bani and these produced last season 374,000 bales. The

Department is still extending the growth of pure Bani in the Bir District, the outturn last season being 21,347 bales as against 16,498 bales in 1922-23.

Hyderabad holds a prominent place in Indian cotton and the value of this supply of long stapled cotton, undoubtedly one of the very best in India, to Indian Mills cannot be too strongly emphasised.

UNITED PROVINCES.

Attention has been concentrated on the extension of selected indigenous varieties with superior agricultural and lint characters. The selection made by the Deputy Director of Western Circle known as A. 19 has been approved by both spinners and growers and the chief line of work during the next few years will be the organisation of an extensive and widespread supply of pure seed. There are approximately 5,00,000 acres in the Western districts for which this type is suitable and which it is anticipated will be sown with it within a measureable time.

In the season 1924 2,500 acres are under controlled cultivation for seed supply and arrangements are under consideration for the purchase and ginning of the crop under the supervision of the department. In the season 1925 it is expected that 30,000 acres will be under this type and the Department is aiming at a pure seed supply for 1,00,000 annually.

In the Bundelkhand division and Cawnpore districts the extension of the cultivation of the selection known as Jnl continues and compact areas of this variety are increasing within easy reach of the Cawnpore market. Arrangements are being made for an extended supply of seed.

Selections made during the cotton survey and hybrids produced by the Economic Botanist are being established in parts of the Rohilkhand division where a compact area suitable for the production of a considerable area of these varieties exists.

No extension has taken place in the cultivation of American Cotton and the impossibility of finding sufficient irrigation for this type will probably prevent any further extension of areas in the United Provinces.

Punjab.

The success of Punjab-American 4F on average cotton soils of the Canal Colonies is undisputed in normal years. The setback consequent on the partial failure of the P/A crop in 1921-22 due to abnormal weather conditions and defective water supply has been tided over. The area under 4F in the Province came up to 435,000 acres during the last season. The cultivation of 285F, a more hardy variety than 4-F introduced in 1921, is rapidly extending. Last year 21,000 acres were under this variety. 34,000 acres are reported to have been sown with the improved selections of Desi cotton intended for those places where the Americans do not thrive. Under fair condition P–A 4F fetches on an average a flat premium of Rs. 42 per acre over the Desis, while, 285F gives to the grower a premium of at least Rs. 56 per acre over Desis. The extra income per acre to the grower of a selection of Desis by virtue of its yield is put at Rs. 18. The economic importance of these improved varieties is that the Province is richer by no less than 2 crores of Rupees.

Burmah.

Further selection has yielded promising results and pure strains of Wagale and Wagyi cotton are now being tested on the Central Farms.

Work with hybrid strains is also in progress with a view to combining ginning outturn and quality with hardiness and high yield. Pwinbyu, a pure strain of Wagale, now covers an area of 700 acres.

In Thayetmyo District the area under Cambodia is increasing, though only slowly.

There is a good demand for seed but much of it is being sown mixed with Wagyi.

Even when grown mixing is frequently practised by the jungle buyers.

To check this and other practices which are militating against the improvement of cotton in the district an attempt was made last year to establish a public cotton auction at Allanmyo. This was unsuccessful. A further attempt is being made this year.

The estimated area under Cambodia cotton in this Circle is now 570 acres.

In 1923-1924 I am informed that millers purchased 39,833 Viss of Cambodia kuppas from the Lower Chindwin District. The area under the crop is extending.

Padu Pwinbyu cotton, an improved white-flowered selection of Wagale, is being distributed in the Circle but the area under this strain is at present small.

MADRAS.

In view of the rapid deterioration of the quality of Cambodia cotton, and having regard to the unsatisfactory nature of the seed supply to ryots in the tract, the Department has taken up the work of improvement of Cambodia Cotton, so that the fair name of Coimbatore (Tiruppur) Cambodia may be maintained. This work was started five years ago, and according to the present arrangements the Department enters into a yearly contract with selected ryots who agree to grow Cambodia cotton under irrigation in special areas known as seed-farms from seed supplied by the Department and under Departmental supervision. The crop is kept pure by the removal of any plants which are not true to type or variety. The produce of the first pickings alone is purchased by the Department between specified dates at a premium over the then ruling market price. All the kapas thus purchased is carted to a central ginning factory where it is ginned under Departmental supervision. The lint is sold by auction and the seed sold in retail to the ryots of the district. That the quality of the lint produced has been of the best is testified by the high prices paid for the cotton, and the eagerness with which the auction sales are attended by the representatives of the Bombay and other Mill-owners. At each of the auctions held during the past five years, the Departmental cotton has always fetched a price of at least Rs. 20 per candy over the prevailing market rate.

The seed produced at the seed farms is also purchased by ryots on account of its excellence and purity, and the quantities of seed

produced and distributed during the past four years are noted below :—

	lbs.		acres.
1920-21 ..	145,562	sufficient to sow	9,700
1921-22 ..	279,030	,, ,,	18,600
1922-23 ..	180,000	,, ,,	12,000
1923-24 ..	250,000	,, ,,	16,000

Owing to the great demand for seed, seed unions to enable the ryots to sell their cotton co-operatively while retaining the seed for distribution were organised during the year under report, and 8 units combined to gin co-operatively, the produce grown over an area of 900 acres. The lint obtained was sold for them by auction by the department.

Seed of an improved type of Company Cotton (Karunganni) was distributed and sown over an area of 72,000 acres during the year under report.

In the Northerns area sufficient seed for 20,550 acres of the selection " Nandyal 14 " (a white cotton of good length and strength and commanding a premium of ordinary northern of Rs. 50. per bale) was issued by the Agricultural Department.

In the Westerns area the selection known as Hagari 25 was issued for 81,000 acres.

The area under irrigated Cambodia rose to 204,100 acres, the estimated yield being 119,000 bales.

APPENDIX VIII.

GOVERNMENT OF INDIA.

LEGISLATIVE DEPARTMENT.

The following Act of the Indian Legislature received the assent of the Governor-General on the 16th February 1924, and is hereby promulgated for general information :—

Act No. 1 of 1924.

An Act to amend the Indian Cotton Cess Act, 1923, for certain purposes.

XIV of 1923. Whereas it is expedient to amend the Indian Cotton Cess Act, 1923, for certain purposes hereinafter appearing; it is hereby enacted as follows :—

Short title. 1. This Act may be called the Indian Cotton Cess (Amendment) Act, 1924.

XIV of 1923. Amendment of Section 2, Act XIV of 1923. 2. To clause (*a*) of Section 2 of the Indian Cotton Cess Act, 1923 (hereinafter referred to as the said Act), after the word "situated" the following shall be added, namely :—

"or any other officer appointed by the Local Government to perform the duties of a Collector under this Act".

Amendment of Section 3, Act XIV of 1923. 3. Section 3 of the said Act shall be re-numbered as sub-section (1) of Section 3, and to that section the following sub-section shall be added, namely :—

"(2) The Governor-General in Council may, by notification in the *Gazette of India*, direct that the cess referred to in sub-Section (1) shall be levied and collected on all cotton produced in India and exported by land from British India to any foreign territory outside India which may be specified in the notification."

4. Section 8 of the said Act shall be re-numbered as sub-section (1) of Section 8, and to that section the following sub-section shall be added, namely :—

Amendment of Section 8, Act XIV of 1923.

"(2) In respect of cotton exported by land on which the cess is leviable, the cess shall be assessed and levied by such authorities and in such manner as may be prescribed."

5. In clause (*r*) of sub-section (2) of Section 15 of the said Act after the words "by sea" the words "or by land" shall be inserted.

Amendment of Section 15, Act XIV of 1923.

(Sd.) H. MONCRIEFF SMITH,

Secretary to the Government of India.

APPENDIX IX.

No. 3.

GOVERNMENT OF INDIA.

DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

(Agriculture).

Dated DELHI, *the 2nd January* 1924.

NOTIFICATION.

In exercise of the power conferred by section 15 of the Indian Cotton Cess Act, 1923 (XIV of 1923), the Governor-General in Council is pleased to direct that the following further amendments shall be made in the Indian Cotton Cess Rules, 1923, namely :—

1. After rule 4 of the said rules, the following rule shall be inserted, namely :—

Election of Vice-President.

"4 A (1). The Committee shall before the first day of April in each year elect a member, for the time being resident in Bombay, to be Vice-President of the Committee for the twelve months beginning on that date.

(2) In the event of the Vice-President resigning his Office as such or ceasing to be a member of the Committee or to be resident in Bombay, the Committee shall forthwith elect a member to be Vice-President of the Committee for the unexpired portion of the term of office of the Vice-President elected under sub-rule (1)".

2. After rule 10 of the said rules, the following rule shall be inserted, namely :—

Provident Fund.

"10 A (1). In this rule 'servant' means a salaried Officer or servant of the Committee other than a Government servant whose services have been lent or transferred to the Committee.

(2) The Committee shall establish and maintain a contributory provident fund for the benefit of its servants and may require any of its servants or any class of its servants to subscribe to the fund.

(3) The Committee may direct that subscription to the fund shall be optional in the case of any of its servants or of any class of its servants, but a servant who in the exercise of an option so conferred elects to subscribe to the fund shall not thereafter be permitted to cease from subscribing thereto.

(4) A servant who is required or elects to subscribe to the fund shall subscribe thereto such fraction, not exceeding one-twelfth, as may be determined by the Committee, of the pay earned by him while on duty, and may at his option subscribe in addition a like fraction of his leave pay.

(5) Subscriptions shall be recovered monthly in respect of and by deduction from the subscriber's pay for the preceding month, the amount to be recovered in accordance with sub-rule (4) being calculated to the nearest whole rupee".

(Sd.) M. S. D. BUTLER,

Secretary to the Government of India.

GOVERNMENT OF INDIA, DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

AGRICULTURE.

NOTIFICATION.

SIMLA, *the 9th April* 1924.

No. 575.—The following rules which have been made by the Indian Central Cotton Committee in exercise of the power conferred by section 16 of the Indian Cotton Cess Act, 1923 (XIV of 1923), and with the previous sanction of the Governor-General in Council, are hereby published in pursuance of Section 17 of the said Act :—

1. In the following rules—

" The Act " means the Indian Cotton Cess Act, 1923.,

" The Committee " means the Indian Central Cotton Committee constituted under the Act.

" The Fund " means the Provident Fund constituted and established under the Act.

" The Trustees " means the persons for the time being appointed by the Committee to act as Trustees of the Fund.

" Servant of the Committee " means a salaried officer or servant of the Committee other than a Government servant whose services have been lent or transferred to the Committee.

2. The Fund shall be deemed to have been constituted and established as from the 1st day of April 1923 for the benefit of all permanent servants of the Committee except such servants as the Trustees may in their absolute discretion decide not to admit to Membership.

3. (*a*) Contribution to the Fund shall be compulsory on all permanent servants of the Committee for the time being in receipt of a salary in excess of Rs. 30 per mensem.

(*b*) Contributions by servants of the Committee shall be at one uniform rate of one-twelfth of pay provided that in the case of a servant of the Committee employed for a term of years under specific agreement the rate shall be such rate not exceeding one-twelfth as may be provided in the aforesaid agreement. Such contributions shall be deducted monthly from the salary payable to each servant.

4. The Fund shall consist of the contributions and additions which are to be carried to it as hereinafter provided and the income of the Fund and of the investments for the time being representing the same shall also be added to the Fund.

5. The Fund shall be vested in and be managed by two Trustees appointed for the purpose by the Committee from time to time from amongst its members and officers and these rules shall be interpreted by the Trustees whose decision shall be final and binding upon all members.

6. The moneys (including the net income of the Fund for the time being available for distribution) from time to time in the hands of the Trustees upon the trusts hereof and not presently required for making any payments pursuant hereto, shall, if and so far as the Committee shall be willing to accept the same, be advanced to the Committee by way of loan repayable on demand and carrying interest at 5 per cent. per annum, and the Committee may at any time pay off any moneys so advanced and any money in the hands of the Trustees upon the trusts hereof which the Committee shall at any time be unwilling to accept on loan or which may have been repaid by the Committee may be invested in any security in which Trust property may be lawfully invested under the Indian Trusts Act, 1882. The investments of such money may at any time be varied as may seem expedient to the Trustees or such money may be placed in deposit with any Bank or Banks approved by the Governor-General in Council under the Indian Cotton Cess Rules.

7. (*a*) The Committee's contribution to the Fund shall be at the rate of 100 per cent. on the subscriber's contributions and shall be made yearly on the 31st day of March. The first contribution shall be made on the 31st March 1924.

(*b*) A servant of the Committee who prior to the constitution of the Fund was permanently employed in the office of the Indian Central Cotton Committee constituted under Resolution No. 404-22 of the Governor-General in Council, dated 31st March 1921, and whose service has been continuous shall, if admitted to membership of the Fund, be entitled to a further contribution at the time of death or retirement equal to one month's pay at the rate which he was drawing on the 1st of April 1923, provided that he has otherwise qualified for the payment of the Committee's contributions.

8. A separate account in the Form A annexed to these rules shall be maintained for each subscriber and such account shall show :—

(1) the subscriber's contributions,

(2) the amount which the Trustees may credit under Rule 10 as income derived from such contributions,

(3) the subscriber's share of the Committee's contribution and of lapses and forfeitures, and

(4) the amount which the Trustees may credit under Rule 10 as income derived from his share of the Committee's contributions.

9. Any loss to the Fund from any cause whatever and all the necessary expenses of management and all other costs, charges and expenses to which the Trustees or the Committee shall be put in connection with the Fund for any reason whatsoever shall be borne by and be a charge on the Fund and shall be deducted in the first place from the income derived from subscribers' contributions before such income is distributed.

10. The net income of the Fund which the Trustees may decide is for the time being available for distribution shall on the 31st day of March in each year commencing with the 31st March 1924, be credited to the accounts of the various subscribers in the manner following, that is to say, in column 3 of the account shall be credited to each subscriber a sum bearing the same proportion to the total sum allocated by the Trustees as the net income earned by the subscribers' contributions in column 2 as such subscribers' contributions in column 2 shall bear to the total contributions in column 2 at the date of such crediting and in column 5 shall be credited to each subscriber a sum bearing the same proportion to the balance of the said net income as the amount standing to the credit of such subscriber in column 4 shall bear to the total amount in that column of the Committee's contributions and of lapses and forfeitures at the date of such crediting of net income: Provided that the amount credited to each subscriber's account under column 3 shall not be less than would have been earned by the subscribers' contributions in column 2 had these amounts been deposited in the Post Office Savings Bank from time to time as received.

11. The accounts of the Fund shall be made up yearly to the 31st day of March.

12. In the event of a subscriber being dismissed from the service of the Committee for grave misconduct, of which fact the decision of the Committee shall be final and binding upon the subscriber, the whole of his interest in the Fund may be forfeited to the Trustees for the benefit of the Fund: Provided that if the misconduct for which the subscriber shall have been dismissed shall have caused monetary loss to the Committee the Trustees in their

absolute discretion may, but under no circumstances shall be bound to, refund to the Committee in respect of such loss such sum as the Trustees may determine, but not exceeding the total sum standing to the credit of the subscriber in the books of the Fund at the date of his dismissal.

13. A subscriber's contributions to the Fund and the amounts credited to his account by the Trustees from time to time as income earned thereon shall be his property funded for his benefit and save as provided in Rule 12 shall not be forfeitable in any circumstances except as may be provided by any law.

14. A subscriber's interest in the contributions made by the Committee to the Fund does not commence until he retires from the service of the Committee and qualifies for admission to the benefit of the Committee's contribution under these rules.

15. A subscriber's interest in the Fund shall be strictly personal and cannot be transferred or assigned or alienated in any way, whether by way of security or otherwise, and the Trustees shall not recognise any such assignment, transference or alienation. In the event of any attempted transfer assignment or of a prohibitory order or attachment or process of a Civil Court being served on the Committee or the Trustees purporting to vest the whole or any part of the Fund standing to the credit of the subscriber in some person other than the subscriber, to attach or to order the payment into a Civil Court or the withholding from such subscriber, of the Fund or any part thereof, such attempted dealing order attachment or process shall disentitle the subscriber to any share in the Committee's contribution and to any income derived therefrom (shown as credited to his account) and the Trustees may in their absolute discretion order that for such further period as they may deem fit the subscriber shall not be entitled to any share of the Committee's contribution or the income therefrom: Provided always that nothing herein contained shall relieve the subscriber from his liability to continue to contribute to the Fund as provided in Rule 3. No certificate or pass book given by the Trustees to a subscriber to the Fund shall be hypothecated or used in any way as being a security to a third party.

16. *Payments from the Fund.*—The full amount standing to a subscriber's credit including his own and the Committee's contri-

butions and the income derived therefrom shall be payable as follows :—

(1) On the death of the subscriber to his nominee or heir under Rule 20 (1).

(2) To the subscriber on his retirement from the service of the Committee provided that he has either—

(*a*) completed 15 years' service, or

(*b*) if employed on specific agreement for a term of years, has fulfilled his agreement, or

(*c*) established to the satisfaction of the Trustees that his retirement is necessitated by incapacity for further service.

17. A subscriber, who leaves the service of the Committee without fulfilling the condition of Rule 16, shall be entitled only to payment of his own accumulated subscriptions and income derived therefrom provided that the Trustees shall have absolute discretion to waive forfeiture of the subscriber's interest in the Committee's contributions and the income derived therefrom if this concession is in their opinion justified.

18. *Advances from the Fund.*—Advances from the amount standing to their credit on account of their own subscriptions may at the discretion of the Trustees be granted to subscribers in deserving cases of sickness or other urgent cause, for themselves or for their families; such advances to be subsequently repaid by instalments to be fixed by the Trustees in each case with interest at such rate and payable at such times and whether simple or compound as the Trustees may direct.

19. A subscriber's account shall be closed :—

(1) when he dies, on the day after the date of his death,

(2) when he quits the service of the Committee, from the day on which he quits it.

When a subscriber's account is closed, such amount, if any, as may be decided by the Trustees shall be added in respect to the portion of the year since the 31st day of March preceding.

No further contribution and interest shall be credited in respect of any period subsequent to that date.

20. *Procedure on Withdrawal.*—(*i*) Each subscriber on joining the Fund shall furnish a declaration in the form annexed showing how he wishes the amount to his credit in the Fund to be disposed of on his death. Such declaration is revocable at any time during the subscriber's lifetime but a fresh declaration shall be operative only on being received by the Trustees. On a subscriber's marriage or re-marriage any declaration previously made will forthwith become null and void.

If a subscriber fail to make and maintain the required nomination the amount which would have been credited to his account on account of the Committee's contribution and income thereon shall lapse to the Fund, but the Trustees at their absolute discretion may make such payment in this respect to the deceased's widow or family as they may deem fit.

On the death of a subscriber the full amount standing to his credit shall be paid without deduction either to his nominee as provided or (if his nominee is a minor at the time such amount is payable) to the person for the time being appointed to receive such amount on behalf of the minor nominee irrespective of the period for which the subscriber has served but subject to any claim under Rule 12. In the event of no valid nomination being in existence the amount standing to the deceased subscriber's credit in columns 2 and 3 of the form prescribed in Rule 8 shall be paid to his legal heirs.

(*ii*) If the withdrawing subscriber be living he shall apply to the Trustees for payment of the amount to his credit. The Trustees shall thereupon decide the further amounts if any which are to be credited to the subscriber's account under these rules and shall cause payment to be made to the subscriber.

(*iii*) When payment of a subscriber's account to himself or to his nominee (or in cases where no valid nomination was in existence to his legal heir) has been accepted no further claim shall lie against the Fund nor shall the Trustees' decision as to the amounts credited to the subscriber's account be questioned.

21. Every servant who shall be or become a subscriber shall be subject to these rules and shall sign an agreement in the form annexed to these rules.

22. The Fund may be wound up under the following circumstances—

(*a*) If the Committee be dissolved by notification under Section 14 of the Cotton Cess Act, 1923.

(*b*) By resolution of the Committee approved by the Governor-General in Council.

On the winding up of the Fund the assets shall be realised and shall be distributed amongst subscribers in accordance with their accounts.

FORM A.

INDIAN CENTRAL COTTON COMMITTEE PROVIDENT FUND.

Form of subscriber's account (*Rule* 8).

Name of Employee.

Date.	Subscriber's contributions.	Annual addition on account of income on subscriber's contributions.	Committee's annual contributions and other additions.	Income on Committee's contributions.	Initials of Controlling Officer.	Remarks.
1	2	3	4	5	6	7

FORM OF DECLARATION.

(For *Subscriber.)

I hereby declare that in the event of my death the amount at my credit in the Indian Central Cotton Committee Provident Fund shall be distributed among the persons mentioned below in the manner shown against their names.

The amount due to nominee who is a minor at the time of my death should be paid to the person whose name appears in Column 5.

Name and address of the nominee or nominees.	Relationship with the Subscriber.	Whether major or minor; if minor, state his age.	Amount or share of deposit.	Name and address of the person to whom payment is to be made on behalf of the minor.	Sex and parentage of person mentioned in Column 5.
1	2	3	4	5	6

* Here state married or unmarried.

Two Witnesses to Signature

Station

Signature of Subscriber.

Date

FORM OF AGREEMENT.

I hereby declare that I have read the foregoing rules of the Indian Central Cotton Committee Provident Fund and that I agree to be bound by them.

Dated day of 19 at

Name in full

Date of birth

Date of joining appointment

Nature of appointment

Salary per mensem Rupees

Signature

Witness Name { Address / Occupation

Witness Name { Address / Occupation.

No. 576.—The following amendment to the rules published under the notification of the Government of India in the Department of Education, Health and Lands, No. 775, dated the 28th June 1923, which has been made by the Indian Central Cotton Committee, in exercise of the power conferred by clause (*d*) of Section 16 of the Indian Cotton Cess Act, 1923 (XIV of 1923), and with the previous sanction of the Governor-General in Council, is hereby published in pursuance of Section 17 of the said Act :—

" After Rule 11 of the said rules, the following rule shall be inserted, namely :—

" 11 A. The Finance Sub-Committee (or the President if no Finance Sub-Committee be appointed) may require any officer or servant appointed by the Committee and whose duties involve financial responsibility, to furnish security for the faithful performance of his duties and may fix the amount and nature of the security so required."

M. S. D. BUTLER,
Secretary to the Government of India.

The Times Press, Bombay—J. 6140-24.

ANNUAL REPORT

OF THE

Indian Central Cotton Committee,

BOMBAY,

FOR THE

YEAR ENDING AUGUST 31st, 1925.

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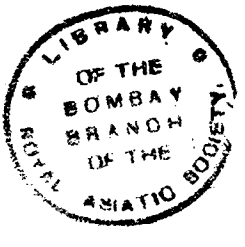
ANNUAL REPORT

OF THE

Indian Central Cotton Committee, Bombay,

FOR THE

Year ending August 31st, 1925.



CONTENTS.

	PAGE.
Personnel	1
Sub-Committees	4
Staff	8
The Work of the Year	9
Regulation of Gins and Presses	11
Open Cotton Markets	13
Marketing of Improved Varieties of Cotton	13
The New Liverpool Futures Contract	15
Spinning Trials on Indian Cottons	16
Finance of the Cotton Crop	16
Measures to prevent the introduction of the Mexican Boll Weevil	17
Agricultural Research	18
Institute of Plant Industry, Indore	20
Technological Research	21
Research Students	22
Secretary's Tours	23
Collection and Supply of Information	23
Annual Report of the Director, Technological Laboratory	25

APPENDICES.

I.	Opinions of Millowners regarding working of the Cotton Transport Act	35
II.	Madras Notification under the Cotton Transport Act	36
III.	Cotton Ginning and Pressing Factories Act, 1925, and the Indian Cotton Ginning and Pressing Factories Rules, 1925	44
IV.	Note on Bill for Regulation of Gins and Presses	63
V.	Areas under Improved Varieties of Cotton	67
VI.	Liverpool, Empire and Miscellaneous Cotton Delivery Contract	69
VII.	Spinning Tests on Indian Cottons	71
VIII.	Preliminary Questionnaire on Finance of the Cotton Crop Up-country	78
IX.	Questionnaire for Village and Market Investigations	80
X.	Press Communiques and Notifications regarding Importation of American Cotton into India	83
XI.	Present Position of Cotton Research in India	89
XII.	List of Scientific and Technical Officers	111
XIII.	Programme of Cotton Investigation of the Indore Institute of Plant Industry	115
XIV.	List of Research Students	117
XV.	Introduction of Improved Varieties of Cotton in various Provinces	120

Annual Report of the Indian Central Cotton Committee, Bombay, for the Year Ending August 31st, 1925.

THE Central Cotton Committee was constituted by Resolution No. 404–22, dated the 31st of March, 1921, of the Government of India in the Department of Revenue and Agriculture and was originally an advisory Committee. With the passing of the Cotton Cess Act the Committee was permanently incorporated and provided with funds of its own for the promotion of research for the improvement of cotton growing. The Committee's activities, therefore, fall into two main groups. In the first place it continues to advise the Government of India and Local Governments on matters connected with the improvement of cotton growing and cotton marketing-particularly on measures designed to prevent abuses and malpractices. In this capacity the Committee not only deals with such references as are made to it by Government, but continues to take the initiative in bringing to the notice of Government matters which require attention. In provincial matters the aim of the Committee is to work with and through the Provincial Cotton Committees which have been established in most provinces and to place at the disposal of the latter such information as will enable them to design measures to meet local needs.

Apart from its more formal activities the value of the Committee as a common meeting ground for all sections of the cotton industry is steadily becoming more apparent. In the administration of the cotton cess funds the Committee provides for research for the benefit of cotton growing in India as a whole, and this aspect of its work is steadily becoming more important.

PERSONNEL.

The personnel of the Committee on August 31st, 1925, was as follows:—

1. PRESIDENT—The Agricultural Adviser to the Government of India, *ex-officio*, Dr. D. Clouston, C.I.E.

2. REPRESENTATIVES OF AGRICULTURAL DEPARTMENTS.

Madras	Mr. R. C. Broadfoot, Cotton Specialist.
Bombay	Dr. H. H. Mann, Director of Agriculture.
United Provinces ...	Mr. G. Clarke, Director of Agriculture.
Punjab	The Director of Agriculture, Mr. D. Milne.
Central Provinces ...	The Director of Agriculture, Mr. F. J. Plymen.
Burma	Mr. T. D. Stock, Deputy Director of Agriculture.

3. THE DIRECTOR-GENERAL OF COMMERCIAL INTELLIGENCE, *ex-officio*.

4. REPRESENTATIVES OF CHAMBERS OF COMMERCE AND ASSOCIATIONS.

The East India Cotton Association	Mr. W. Ellis Jones.
The Bombay Mill-owners' Association ..	Mr. J. A. Kay, M.L.C. (Vice-President).
The Bombay Chamber of Commerce.. ...	Mr. V. A. Grantham, M.L.C.
The Indian Merchants' Chamber, Bombay ..	Sir Purshotamdas Thakurdas, Kt., C.I.E., M.B.E., M.L.A.
Karachi Chamber of Commerce	Mr. F. G. Travers.
Ahmedabad Mill-owners' Association ..	Seth Kasturbhai Lalbhai, M.L.A.
Tuticorin Chamber of Commerce	Mr. G. Z. Meli.
Upper India Chamber of Commerce.. ..	Mr. Bertram West.
The Empire Cotton Growing Corporation	Mr. W. Roberts.

5 and 6. COMMERCIAL REPRESENTATIVES NOMINATED BY LOCAL GOVERNMENTS.

Central Provinces	... Mr. S. B. Mehta, C.I.E. Rai Bahadur K. S. Nayudu, M.L.C.
Madras	... Mr. H. B. Moore.
Punjab	... Rai Bahadur Seth Prabhu Dayal, M.B.E.
Bengal	... Mr. B. K. Lahiri.

7. CO-OPERATIVE REPRESENTATIVE.

Mr. B. F. Madon.

8. REPRESENTATIVES OF COTTON GROWERS.

Madras	... M.R.Ry. R. Appaswami Naidu Garu. M.R.Ry. B. P. Sesha Reddi Garu
Bombay	... Rao Bahadur Bhimbhai Ranchodji Naik. Prof. S. C. Shahani.
United Provinces	... The Hon'ble Khan Bahadur Nawab Sir Muhammad Muzammil Ullah Khan, K.C.I.E., O.B.E. The Hon'ble Lala Sukhbir Sinha.
Punjab	.. Mr. H. T. Conville. Honorary Lieut. Rai Bahadur Chaudhri Lal Chand, O.B.E.
Central Provinces and Berar	.. Rao Sahib V. G. Kulkarni, M.L.C. Mr. N. V. Deshmukh.

9, 10 and 11. REPRESENTATIVES OF INDIAN STATES.

Hyderabad State	.. Mr. Mazhar Hussain, Director of Agriculture.
Baroda State	.. Director of Commerce and Industries, Dr. S. M. Pagar, M.A.
Gwalior State	.. Deputy Director of Agriculture, Mr. Hiralal H. Pandya.
Rajputana and Central India States ..	.. Mr. A. Howard, C.I.E., Director of the Institute of Plant Industry, Indore.

Additional persons nominated by the Governor-General in Council :

1. Mr. K. B. Tilloo, Representative of the Indore State.
2. Mr. W. Youngman, Economic Botanist for Cotton, Central Provinces.
3. Rao Sahib Bhimbhai M. Desai, Deputy Director of Agriculture, Gujerat, Surat.
4. Dr. L. C. Coleman, Representative of the Mysore State.
5. Mr. G. R. Hilson.

Secretary (appointed by the Government of India)—Mr. B. C. Burt, B.Sc., M.B.E., I.A.S.

As will be seen, several changes in membership in the Committee took place during the year. A ballot for retiring members took place at the February meeting when 12 members retired all of whom were re-appointed. Mr. Grantham, the Committee's first Vice-President, retired from office at the end of February as he found it impossible to undertake the responsibilities of Vice-President in addition to those of the President of the Bombay Chamber of Commerce. The Committee are fortunate in that Mr. Grantham still represents the Chamber of Commerce on the Committee, and at their tenth meeting placed on record, by formal resolution, their appreciation of the services which he had rendered to the Committee. Mr. J. A. Kay, the representative of the Bombay Millowners' Association, of which he is a past President, was unanimously elected Vice-President in succession to Mr. Grantham.

SUB-COMMITTEES.

The following members were appointed to form the *Standing Finance Sub-Committee* required by the Indian Cotton Cess Rules :—

Mr. J. A. Kay, M.L.C. (Vice-President and Chairman, *ex-officio*).

Sir Purshotamdas Thakurdas.

Mr. B. F. Madon.

Rao Bahadur Bhimbhai Ranchodji Naik.

Mr. W. Ellis Jones.

Mr. F. G. Travers.

Dr. H. H. Mann.

Mr. V. A. Grantham.

Under the Cotton Cess Act and Rules the Standing Finance Sub-Committee, subject to such general directions as may be laid down by resolution of the Central Cotton Committee, controls the finances of the Committee. In many other ways it acts as an executive Sub-Committee.

The Local Sub-Committee during the year consisted of the following members :—

Mr. J. A. Kay (*Vice-President*), Mr. V. A. Grantham, Mr. W. Ellis Jones, Sir Purshotamdas Thakurdas, Mr. F. G. Travers, Seth Kasturbhai Lalbhai, Mr. G. Z. Meli, Rao Bahadur Bhimbha Ranchodji Naik, Mr. B. F. Madon, Dr. H. H. Mann and Dr. S. M. Pagar.

The object of this Sub-Committee, which includes all members of the Central Cotton Committee living in or near Bombay, is to deal with matters of general importance in the interim between meetings of the full Committee ; to the meetings all members of the Central Committee who may be visiting Bombay are invited. This Sub-Committee has performed most valuable work not only in dealing with various references from Government which required prompt attention but in the detailed examination of many matters dealt with by the Central Committee to which the Local Sub-Committee reports. In particular, this Sub-Committee worked out the detailed arrange ments for the fumigation of American cotton to prevent the introduction of the Boll Weevil and the draft rules under the Cotton Ginning and Pressing Factories Act. Both these matters are of very considerable importance to the cotton trade. It is difficult adequately to appreciate the work which the above two Sub-Committees have carried out during the year for without their assistance it would have been impossible for the Central Committee to have made the progress which it has achieved.

A new Standing Sub-Committee was appointed by the Central Cotton Committee in February last in connection with the investigation of the finance of the cotton crop which has now been undertaken. This Sub-Committee consists of the following members :—

Mr. J. A. Kay (Vice-President and Chairman, *ex-officio*), Dr. H. H. Mann, Mr. W. Ellis Jones and Mr. B. F. Madon.

Cotton Ginning and Pressing Factories Sub-Committee.—The following Sub-Committee was appointed on July 6th, 1925, for the purposes of Section 2 (*f*) of the Cotton Ginning and Pressing Factories Act :—

(1) The Vice-President (Chairman *ex-officio*), Mr. J. A. Kay.

(2) Five members representing the cotton trade who are residents of the Bombay Presidency :—

Mr. V. A. Grantham, Sir Purshotamdas Thakurdas, Mr. W. Ellis Jones, Mr. G. Z. Meli, and Mr. F. G. Travers.

(3) Four up-country members :—

Madras	..	.. Mr. H. F. P. Hearson.
United Provinces		.. Mr. Bertram West.
Punjab	..	.. Seth Prabhu Dayal.
Central Provinces and Berar	..	.. Mr. S. B. Mehta.

(4) The Co-operative Representative.—Mr. B. F. Madon.

This Sub-Committee meets regularly, if business requires, on the first Monday of every month, its function being to deal with matters arising out of the administration of the Cotton Ginning and Pressing Factories Act.

Agricultural Research Sub-Committee.—This Sub-Committee meets in conjunction with meetings of the full Committee and examines research proposals, the progress reports on research schemes and the reports of research students. In addition, this Sub-Committee met three days prior to the February meeting of the full Committee and submitted to the Central Committee a report on the present position of agricultural research in India and a research programme. The Sub-Committee which met in February consisted of the following members :—

Dr. D. Clouston (*President*), Mr. J. A. Kay (*Vice-President*), Messrs. Grantham, Broadfoot, Mann, Milne, Roberts, Madon, Lahiri, Deshmukh, Pagar, Howard and Sir Purshotamdas Thakurdas.

The Committee appointed at the February meeting for the succeeding twelve months consists of the following members :—

Dr. D. Clouston (*President*), Mr. J. A. Kay (*Vice-President*), Mr. A. Howard (Director of the Institute of Plant Industry, Indore), Mr. B. F. Madon (Co-operative Representative), Sir Purshotamdas Thakurdas (Cotton Trade representative), Mr. H. T. Conville (Cotton Growers Representative), Dr. H. H. Mann and Messrs. D. Milne, W. Youngman and R. C. Broadfoot (Representatives of Agricultural Departments) and the Secretary.

Technological Research Sub-Committee.—This Sub-Committee meets in connection with meetings of the Central Committee, and also at other times when necessary, to discuss matters arising out of the Committee's arrange-

ments for technological research and to advise the Central Cotton Committee and the Director of the Laboratory on the management and development of the Committee's Technological Research Laboratory. The Sub-Committee appointed in February consists of the following members :—

The Vice-President (Mr. J. A. Kay), Mr. S. B. Mehta, Dr. H. H. Mann, Messrs. D. Milne and B. West, and the Secretary.

Mr. Howard and Seth Kasturbhai Lalbhai were added to the Sub-Committee by resolution of the Central Cotton Committee passed at its eleventh meeting.

Selection Sub-Committees were appointed from time to time as required by the Cotton Cess Rules to deal with applications for appointments on the staff of the Committee.

MEETINGS.

Three meetings of the Central Committee were held during the year under report, *viz.*, on December 3rd, 1924, on February 23rd to 25th, 1925, and on July 6th to 8th, 1925.

It is with pleasure that the Committee are again able to record a high standard of attendance at all its meetings. Unfortunately it has not always been possible to avoid clashing with meetings of the various Indian Legislatures, and on occasions this has made it impossible for some members to attend.

On December 3rd, 1924, His Excellency the Viceroy, Lord Reading, conferred on the Committee the honour of performing the opening ceremony of their Spinning Laboratory and laid the foundation-stone of the Technological Research Laboratory.

At their February meeting the Committee had the honour of a visit from His Excellency Sir Leslie Wilson, Governor of Bombay.

At the July meeting the Hon'ble Sir Muhammad Habibullah, Member of the Viceroy's Council for the Department of Education, Health and Lands, and the Hon'ble Mr. D. T. Chadwick, Secretary to the Government of India, Commerce Department, were present.

The Standing Finance Sub-Committee held eleven meetings during the year, the Local Sub-Committee seven meetings, the Special Sub-Committee

appointed to consider the finance of the cotton crop up-country five meetings and the Technological Research Sub-Committee three meetings.

STAFF.

Mr. Burt returned from leave on November 12th, 1924, relieving Mr. Hilson, who officiated as Secretary during his absence.

Mr. Turner held charge of his appointment as Director of the Technological Research Laboratory throughout the year under report.

Mr. R. P. Richardson was appointed Spinning Master of the Technological Laboratory on November 3rd, relieving Mr. Walmsley, who held that appointment temporarily, and has held charge of his appointment throughout the year.

The staff of the Technological Research Laboratory was considerably increased during the year and was also re-organised. Details will be found in the report of the Director.

Messrs. Sen and Dutt held charge of their appointments as Chemical and Microscopical Research Assistants respectively in the Technological Research Laboratory throughout the year.

Mr. Hari Rao, M.Sc. (one of the Committee's Research Students), and Mr. Bathija, M.A. (Cantab.), were appointed Junior Research Assistants in February 1925.

Cotton Research Botanist.—Mr. Trevor Trought, (recently Senior Botanist, Cotton Research Board, Ministry of Agriculture, Egypt,) was appointed to the post of Cotton Research Botanist for the Punjab and took up his duties during August 1925.

Provincial and Local Sub-Committees.—Provincial Cotton Committees continued to do useful work and meetings were held as follows :—

Madras, one meeting.

United Provinces, three.

Central Provinces and Berar, *nil.*

Punjab, two.

Burma, one.

In Bengal a Sub Committee of the Provincial Board of Agriculture deals with cotton matters. In Bombay no Provincial Cotton Committee has yet been appointed and many matters which normally would be dealt with by such a Committee were referred by the Government of Bombay to the Central Cotton Committee and dealt with mainly by their Local Sub-Committee. Divisional Cotton Committees have been appointed in Bombay for the following divisions :—

Gujerat, Khandesh, Southern Division, and Sind.

With the exception of the Sind Committee meetings have been held regularly. In Madras, Local Cotton Committees exist for the following areas :—

Nandyal, Bellary, Guntur, Tuticorin and Tiruppur.

THE WORK OF THE YEAR.

THE COTTON TRANSPORT ACT.

The Act was in force in the Bombay Presidency throughout the year in the following areas :—

In Gujerat three zones were maintained, *viz* :

The South Surat zone,
The Surat zone, and
The Olpad-Ankleshwar zone.

In the Southern Division also three zones were maintained, *viz* :

The Kumpta-Dharwar area,
The Bijapur area, and
The Bagalkot area.

The question of applying the Act to the protection of the Broach area is still under consideration.

The Baroda Government continued to enforce a similar law and notified three zones corresponding with the Bombay areas.

The Rajpipla State also brought into force a State law on the same lines as the India Act, the whole State being constituted as one area since it now grows one improved variety of cotton.

Most definite information has been received from all sources as to the value of the Act in improving and maintaining the quality of the cottons grown in these areas. The opinions of millowners, which are reproduced in Appendix I, show very definitely that since the Act was brought into force Indian mills have been able to purchase more freely of these stapled Indian cottons. Further, the recorded prices, relative to the prices of Broach futures, indicate that the improved quality of the cottons has been reflected in the prices paid. Local enquiry in the districts shows that enhanced prices have been realised by the cultivators.

A distinctly retrograde step was, however, taken by the Bombay Legislative Council in August 1924, when the notification was amended to permit of the wholesale movement of unginned cotton from the Olpad-Ankleshwar to the Surat area under license. In the opinion of the Central Cotton Committee, this premature withdrawal of restrictions cannot but react unfavourably on the reputation of Surat cotton. The policy of the Agricultural Department is to establish one variety of improved cotton south of the Narbada, and the realisation of this objective is in sight. At present, however, certain areas north of the Tapti still grow cottons which are distinctly inferior to genuine Surat cotton and command a lower price. So long as these conditions continue the distinction between the zones north and south of the Tapti should be maintained. Fortunately there is now every hope of the active assistance of the Co-operative Cotton Sale Societies in this tract being secured and that the inferior varieties will shortly be completely ousted.

In the Southern part of the Presidency the Act has continued to work smoothly. Such complaints of mixing as are now received refer to the mixing of ordinary Dharwar-American cotton with the Agricultural Department's improved strain of Upland, the mixing of ordinary Kumpta with the Department's pure strain of improved Kumpta and the mixing of Kumpta and Upland cottons. This question should largely settle itself as the areas under the improved varieties extend, and there is no doubt that the grosser forms of adulteration, such as the mixing of short-stapled Khandesh cotton or Bombay mill waste with valued stapled cottons, have been stopped.

During the last few weeks of the year the Madras Legislative Council passed the necessary resolution enforcing the Cotton Transport Act in three areas in that Presidency, *viz.*, the Tiruppur-Cambodia area, Northerns and Westerns area and the Tinnevelly area. A copy of the notification will be

found in Appendix II. This gives effect to another of the Central Cotton Committee's recommendations and should do much to improve the reputation of the stapled cottons grown in those areas. In the past bare-faced adulteration has spoiled the reputation of these cottons, has prevented the Agricultural Department's improved types from attaining their real value in the market and has caused steady loss to the cotton grower.

It is as yet too early to comment on the zones adopted. In one respect the notification differs from the recommendations of the Provincial and the Central Cotton Committees, *viz.*, in clause (3) which permits the importation of ginned cotton without restriction from certain other areas into the Tiruppur Cambodia area. This exemption is intended to meet the needs of those zones at present not possessing pressing factories. The view of the Central Cotton Committee, as of the Provincial Cotton Committee, is that this is a temporary matter and that the necessary elasticity could better have been provided by the issue of licenses.

It will thus be seen that the Act has now been applied to a large portion of the long-stapled cotton areas in India. As already stated, the question of applying the Act to Broach is under consideration and it is understood that the Hyderabad State have under examination the question as to whether steps should be taken to protect the important Hyderabad Gaorani (Bani) cotton tract. Of the remaining large areas growing long stapled cotton, the most important are to be found in the Punjab, where the application of the Cotton Transport Act has not been practicable in the past owing to the considerable proportion of *desi* cotton which is grown in the same tracts. With the steady increase of American cotton growing in certain parts of the canal colonies, notably in the Lower Bari Doab Colony, the question as to whether the Act would not be of value in reducing the amount of mixing which occurs at present will require consideration.

REGULATION OF GINS AND PRESSES.

The Cotton Ginning and Pressing Factories Act was passed by the Indian Legislature in March last. The Act and Rules will be found in Appendix III. This Act is a necessary corollary to the Cotton Transport Act and should do much to enable the cotton trade actively to discourage the various malpractices which at present occur in a certain number of ginning and pressing factories. The Committee's recommendation that power should be given to Provincial Governments, with the consent of Provincial Legislatures, to introduce the actual licensing of pressing factories, finds no place in the

Act, the general consensus of opinion being that it was first necessary to ascertain how far the marking of bales and the maintenance of records would serve the desired object. The Act as passed enables a purchaser at any stage to trace a bale of cotton to the factory where it was pressed and thence, by means of the press records, to the original owner. The ginning factory records provide information by means of which, in case of need, the chain of ownership can be carried further back. Thus the trade has been placed in a position to protect itself against abuse. The bearing of the Act on the improvement of cotton growing is discussed in a pamphlet issued by the Committee while the Bill was in course of circulation which will be found in Appendix IV.

The Act also provides for weekly returns of cotton pressed throughout British India, thus affording for the first time statistics of the greatest value to the whole of the cotton trade.

In connection with the rules under the Act, the most important point has been the method for the marking of bales. The Committee's original proposal was that the press mark and serial number (*i.e.*, the press mark, year and running number of the bale) should all be punched on the central hoop. In the opinion of many, this is the best way of ensuring that so long as a bale of cotton remains a merchantable bale it will carry the press mark. In the light of the opinions received on the draft rules, the Central Cotton Committee advised the Government of India that for the present it would be sufficient to stencil the running number of the bale on the hessian of a flat lashed side of the bale. In coming to this decision they were guided by the fact that the main feature is the mark denoting the press which it is essential to place on the hoop. The application of the press mark to the hoop presents no difficulty as the hoops can readily be marked before lashing the bale. Some little doubt, however, was expressed as to whether the running number could be punched on the hoops after pressing. As the correct application of these numbers to the hoops before lashing would require careful organisation in the press, it was decided to give press owners the option of either punching the running number on the hoop or of stencilling it on the flat side of the bale.

The full value of the Act will not be realised until the cotton-growing Indian States enforce similar legislation. Fortunately it is understood that the more important States are already taking steps to introduce the necessary laws.

OPEN COTTON MARKETS.

The Bombay (Districts) Cotton Markets Bill, to which reference has been made in previous reports, is still under the consideration of the Local Government. No further steps have been taken for the improvement of primary cotton markets in Madras although the Provincial Cotton Committee has continued to urge the importance of this matter. The present position, therefore, is the same as it was when the Indian Cotton Committee reported in 1918, and only in the Central Provinces and Berar are primary markets properly organised and controlled. A very careful examination of the subject by the Provincial Cotton Committee showed that in the Punjab local conditions demand a modification of the Berar system if cotton markets are to be successful. In that province the density of cotton cultivation is comparatively low and general market organisation somewhat backward, and further the markets must serve for other commercial crops such as wheat and oil-seeds. Hence the system in force in the Central Provinces and Berar and recommended for Bombay—provinces in which cotton forms by far the most important market commodity—requires modification. The essential feature of the Indian Central Cotton Committee's recommendation is that growers shall be fully represented on cotton market committees. The Committee have now advised that in the Punjab, and in other provinces with like problems, it is desirable to investigate the possibilities of cotton market committees which would regulate the condition of cotton trading but which would not assume the general management of the markets.

MARKETING OF IMPROVED VARIETIES OF COTTON.

The Indian Central Cotton Committee has continued to devote considerable attention to means by which the marketing of improved varieties of cotton can be assisted. There are two aspects of this problem where such assistance appears to be necessary. In the first place, the work of the Agricultural Departments would be rendered much easier if, during the early stages, the cotton grower could obtain the true intrinsic value of his produce. Since trade organisation necessarily is designed to deal with the cotton crop of a particular tract as it is and not as it should be, it follows that when a cotton of superior staple is introduced into a short-staple cotton tract the new cotton not only will not at once command its real value in local markets but may even be discriminated against—especially if it possesses a lower ginning percentage than the local variety. The problem, therefore, is to tide over the intervening stages until the new variety is forthcoming in

truly commercial quantities and to see that the new variety reaches the spinner in a pure and unmixed condition. Thanks to the assistance which individual members of the cotton trade have always been willing to give, the Agricultural Departments often have been able to organise the sale of their new cottons while they were building up their seed supply and carrying out district demonstrations. Individual buyers are usually ready to pay full prices for special lots of cotton from seed farms, etc.; and it is not until the systematic introduction of a new variety has met with appreciable success and the replacement of existing varieties has made some progress that any real difficulty is met with. But a stage must always be reached where the crop has become too large for the Agricultural Department to handle and yet where trade buying is not sufficiently developed to ensure a proper market. Secondly, it appears necessary to furnish consumers with better means of knowing what new cottons are available and what they are like ; this is especially true of foreign markets. The bulk of the export trade in Indian cottons is in short-stapled varieties and is organised accordingly. The export of Indian stapled cottons, though relatively small, is considerable in the aggregate and the interests of spinner and grower alike demand that the exportable margin of such cottons shall be increased and the market for them widened so that production may be encouraged and the basis of supply broadened. Here a practical difficulty is that exporters sell mainly on private types which do not correspond with agricultural varieties and that the maintenance of the private type system is considered essential.

In two directions the Central Cotton Committee have been able to take constructive action. In the opinion of the Central Cotton Committee trade buyers would be forthcoming for quite small commercial lots of improved cottons if it were known with certainty where such cotton could be obtained and in what quantities. In Appendix V will be found a summary of information collected from the various Agricultural Departments showing the area under improved varieties of cotton, estimated production, and the principal markets. This information has now been supplied to the trade through Chambers of Commerce and Trade Associations. It is hoped that, coupled with the results of actual spinning tests, which the Committee publishes from time to time, such reports will help materially to promote the demand for the best Indian cottons.

The second direction in which the Committee has taken action to bring improved varieties of Indian cottons to notice is by the provision of type

bales for Cotton Exchanges at the major consuming markets. In this matter the Committee has received the hearty co-operation of the East India Cotton Association, the Liverpool Cotton Association and the Manchester Cotton Association, all of which have undertaken to receive type bales and to so display them that they will be seen by spinners and other buyers. These bales are described by the Agricultural Department's varietal names and enable buyers and sellers alike to compare the Agricultural Department's types with those offered for sale by the trade.

THE NEW LIVERPOOL FUTURES CONTRACT.

It is also of interest to record that the Liverpool Cotton Association have recently introduced a new futures contract for Empire and outside growths; trading in the new contract started from September 1st, 1925. The necessity for a hedge contract against which Empire cottons will be tenderable has received a good deal of public attention during the last eighteen months. The original proposal that Empire cottons of suitable staple should be made tenderable against the Liverpool-American futures contract was decided to be impracticable and a new contract was designed. Through the courtesy of the Liverpool Cotton Association a copy of the new contract is reproduced in Appendix VI. It will be observed that it is of very limited application to Indian cottons since no cotton is tenderable unless equal or superior in value to Strict Low Middling American and of fair staple—a condition which definitely rules out all short-stapled Indian cottons. It is not at present clear to what extent Indian stapled cottons will be tenderable against the new contract. The combination of a value contract with a Strict Low Middling clause (as compared to a Low Middling clause in the American futures contract) seems likely to exclude a number of cottons which, for many purposes, are capable of replacing American. On the other hand, it is argued that were the contract made too wide, especially at the outset, it would not attract buyers and it is certainly essential that the contract should be such as will be freely traded in.

At any rate, a definite step forward can be recorded and for the first time a Liverpool futures contract is in existence against which the best Indian cottons can actually be tendered. If the new contract proves a success it should be of considerable value in maintaining parity in prices between American cotton and Indian stapled cottons.

SPINNING TRIALS ON INDIAN COTTONS.

A reference was made in the last report to the Committee's exhibit of Indian cottons at the British Empire Exhibition at Wembley. That exhibit undoubtedly served a useful purpose in bringing to the notice of both British and Continental spinners Indian cottons with which they were unacquainted. Thanks to the assistance of the Indian Sub-Committee of the Empire Cotton Growing Corporation, it was possible to organize a series of spinning trials under standard Lancashire conditions in several Oldham mills. For the results of these tests we are indebted to the Oldham Master Cotton Spinners' Association whose report is reproduced in Appendix VII. It will be seen that of the new varieties introduced by the various Provincial Departments of Agriculture, several are definitely capable of replacing American cotton for many purposes. A further series of such trials is being conducted on sample bales from the 1924-25 crop. In addition, the results of spinning trials conducted in the Committee's Technological Laboratory have been published as a bulletin. A second bulletin in which the results of spinning trials on 16 Indian cottons from the 1923-24 and 1924-25 crops is now under preparation.

FINANCE OF THE COTTON CROP.

At the request of the East India Cotton Association, the Committee examined the possibilities of an enquiry into the financing of the cotton grower with special reference to his power to hold his produce for short periods during a temporary slump in prices. The original reference suggested that this had an important bearing on the question of broader hedge contracts. The Committee decided to express no opinion on the bearing of such an enquiry on the question of hedge contracts as on this matter there are two distinct schools of thought. They agreed, however, that such an enquiry was justified in connection with the Committee's general study of cotton marketing, and on the clear understanding that the object of the enquiry should be to ascertain the growers' needs and difficulties. Eventually such an enquiry should indicate means by which the grower can be helped.

A preliminary questionnaire * was issued, to which some 200 replies were received from Agricultural and Co-operative officers, non-official co-operative workers, banks, merchants and large cotton growers. Much

* Appendix VIII.

interesting information was received but, as was to be expected, the replies consisted largely of expressions of opinion rather than statements of ascertained facts. From the information so received, however, it was possible to decide on certain areas for which more detailed information was needed, and it was decided to undertake a limited number of local investigations, carried out by full-time investigators. The scope of these local investigations will be clear from the questions issued to investigators(Appendix IX). Briefly this is an attempt to find out for a limited number of villages and markets exactly what existing conditions are. The essential feature of these local investigations is that, for the villages and markets selected, answers to the questions will be obtained from every cotton grower in the village and every seller in the market on certain days. Only in this way does it seem possible to obtain any real picture of actual conditions.

The course of the enquiry in the future will be determined largely by the results obtained from the three investigations now in progress in Khandesh, Berar and the Northerns and Westerns cotton tracts of the Madras Presidency. For these investigations trained staff has kindly been lent by the Agricultural Departments concerned. Meanwhile the detailed examination of the replies received to the preliminary questionnaire probably will afford a considerable amount of information for certain areas.

MEASURES TO PREVENT THE INTRODUCTION OF THE MEXICAN BOLL WEEVIL.

References have been made in previous reports to the possible danger of the introduction into India of this dreaded pest through the medium of American cotton imported for spinning purposes. Such imports are usually small, but their total prohibition would only be justified as a last resource. The Central Cotton Committee consequently recommended that such imports should be limited to a single port for the whole of India, *viz.*, Bombay, and permitted there only on condition of proper fumigation. The necessary experimental work has now been completed and is referred to in detail in the report of the Director of the Technological Laboratory. The commercial side of the question was carefully examined by the Local Sub-Committee and a scheme of fumigation in barges worked out in detail. The Committee's final recommendations to the Government of India stated the conditions which should be fulfilled in order that these imports, which vary greatly in volume in different seasons, might be dealt with in such a way as to cause the minimum of inconvenience to the trade. A copy of the Government *communiques* on the subject and of the notifications and rules which were

issued shortly after the close of the year will be found in Appendix X. The Committee's recommendations were accepted by the Government of India who have provided the necessary equipment and have made arrangements with the Bombay Port Trust for the carrying out of actual fumigation. Fumigation fees have been kept as low as is consistent with the principle that the cost of fumigation, including the ultimate recovery of the capital cost of initial equipment, should be recovered from the importer.

RESEARCH.

As a result of discussion on Agricultural Research at the eighth meeting of the Central Cotton Committee in July 1924, it was decided that the Committee should attempt the formulation of a definite programme of agricultural research and should review their policy in this respect. A note by the Vice-President and a technical note by Mr. Hilson were briefly discussed at the December meeting of the Committee and arrangements made for a thorough examination of the position by the Agricultural Research Sub-Committee prior to the February meeting. A report on the present position of cotton research in India was prepared, which was discussed by the Sub-Committee and subsequently by the full Committee and, as finally adopted, will be found in Appendix XI. Proceeding from this the Committee formulated a list of problems requiring investigation, and further defined somewhat more precisely the Committee's attitude towards agricultural research. The Committee's funds, though considerable, are by no means inexhaustible, and many aspects of research for the improvement of cotton growing are, and must remain, the function of the Provincial Departments of Agriculture. The Committee emphasised the fact that the cotton cess was not intended either to permit of competition with Provincial Departments or to relieve provincial budgets of normal expenditure for the improvement of agriculture. But there remains a large and important sphere of work on the more general problems connected with cotton growing which is open to the Committee. It has been laid down as a primary condition that the Committee will support only such schemes as are of general and wide applicability and that such grants as they give must be to enable new and additional research work to be undertaken.

Madras Pempheres and Physiological Research Scheme.—At its July meeting the Committee adopted one new scheme of work in furtherance of its new programme, *viz.*, the provision at Coimbatore of staff for a group of three inter-connected investigations. In the first place this scheme will provide for the continuance and development of the physiological work on

bud, flower and boll shedding started by Mr. Hilson and it will also provide for investigations into the best means of dealing with the cotton stem weevil (*Pempheres affinis Faust.*) pest. The Stem Weevil, at one time believed only to be a minor pest in the Madras Presidency, has lately shown signs of extension and has caused considerable damage. Whether it can be controlled by means of a more rigid application of the Madras Pest Act has yet to be proved and a most important practical problem is the search for resistant varieties. Preliminary results indicate that such varieties exist, but the reasons for their relative immunity are not understood. The project, therefore, provides for a Research Botanist who will be in charge of the scheme, a Bio-Chemist and Botanical, Chemical and Entomological Research Assistants. As a result of these investigations it is hoped that by the selection of the most suitable strains of cotton and by special methods of cultivation indirect means of reducing the damage caused by this pest will be found.

At the tenth and eleventh meetings of the Committee progress reports on the various research schemes were considered in considerable detail. None of the investigations have been in progress for a sufficient time to enable any practical results to be published, but in all cases ample evidence was received that work was proceeding on sound lines and that results which can be translated into agricultural practice may be expected in the near future.

The Sind Research Scheme, to which reference was made in the last report, has now been brought into being. The Government of Bombay's scheme for agricultural research in Sind in connection with the Lloyd Barrage canals has now been sanctioned and the necessary funds voted by the Legislative Council and the main lines of work have been settled. The Indian Central Cotton Committee have made a grant to provide for a Physiological Botanist and staff for investigations into the behaviour of various types of cottons under new canal colony conditions.

As already mentioned, the Cotton Research Botanist for the Punjab was appointed during the year under report and work on the Lyallpur scheme has now been started.

Research for the improvement of living plants is necessarily somewhat slow and, unlike many forms of research in applied science, preliminary results are necessarily unsuited for publication. Perhaps the best summary of the action which the Central Cotton Committee has taken for the promo-

tion of research for the improvement of cotton growing lies in the statement that the Committee's grants have made possible the employment of 51 additional scientific workers. In Appendix XII will be found a list of research workers paid from the Committee's grant.

INSTITUTE OF PLANT INDUSTRY, INDORE.

Mention has been made in previous reports of the Committee's scheme for a central Agricultural Research Institute for cotton work and in last year's report it was stated that the details of the scheme for the establishment of an Institute of Plant Industry at Indore had been completed. The Institute is maintained by grants from the Indian Central Cotton Committee and from the Durbars of the following Central Indian States :—

Indore, Datia, Dhar, Dewas (Senior), Rutlam, Jaora, Sitamau, and Narsingarh.

The President (Dr. D. Clouston), Sir Purshotamdas Thakurdas and the Secretary have represented the Committee on the Governing Body of the Institute throughout the year. The first meeting of the Governors took place in November 1924, and thanks to the hearty co-operation of the States and, in particular, of the Indore State, very rapid progress has been made in the completion of the Institute. Most of the land has already been laid out and the experimental work on cotton started during the current season. The buildings have also been completed and fully equipped. An additional grant of some six thousand rupees from the various contributing States, being the residue from an old fund for the provision of a joint Agricultural Adviser for the Central Indian States, has materially assisted in the provision of an up-to-date library.

The Institute will issue its own annual report which will be published by the Governors, but it is permissible here to refer to the general programme of cotton investigations which formed the basis of the scheme, and which will be found in Appendix XIII. Briefly, the Institute is undertaking a general study of cotton genetics and cotton physiology for which, being situated in the largest homogeneous cotton-growing tract in India, it is admirably suited. A special study is also being made of the Central India cottons, some of which are believed to be of considerable value. It is also expected that a thorough study of the Bani (*G. indicum*) group of cottons will be possible. It seems clear that many of the problems selected for investigation in the Committee's research programme can be conveniently

studied at Indore, and in particular it is hoped to make provision there for a study of cotton cytology. From the beginning of the 1926 season some of the Committee's research students will work at this Institute.

TECHNOLOGICAL RESEARCH.

A detailed account of the work of the year will be found in the report of the Director which will be found on page 25. The Spinning Laboratory has been fully occupied throughout the year on tests on cottons for Agricultural Departments and on standard Indian cottons, the total number of samples dealt with being 51. The standard Indian cottons are mainly those improved varieties which the Agricultural Departments have established on a commercial scale and the results of these tests are supplied to Indian spinners and to the cotton trade in general. With a view to determining the effect of climate on lint quality and the extent of the seasonal variations, tests on these cottons grown under standard conditions are being repeated annually. The routine for the Experimental Spinning Plant has now been thoroughly worked out and it has been proved that satisfactory results can be obtained from duplicate spinnings on five-pound samples. As will be seen from the Director's report, a similar preliminary survey was necessary of the detailed work to be done in the Testing room and of the organisation required to carry this out. Such work and the subsequent selection and training of the staff occupied a considerable time and in consequence the work of the Testing room lagged behind the work of the Spinning room. Hence it was not possible to furnish results to Agricultural Departments as promptly as was desired, but in all cases where results were needed before the next sowing season it was possible to send out preliminary reports. With the present organisation it will be possible to deal promptly with any reasonable number of Agricultural Departments' samples provided that where results are required before the next sowing season there is no delay in the despatch of the samples to the Laboratory once the crop is harvested.

The staff of the Research Laboratory has also been reorganised and extended during the year, and a certain amount of work on fibre characters has been possible in the temporary laboratory. The main Research Laboratory was completed and occupied shortly after the close of the year.

As already mentioned, there are a number of problems in which the Technological Research Laboratory will co-operate with the various Agricultural Departments. As the spinning test forms the basis of work of the

Laboratory, attention was concentrated on developing this side in the first instance. Further, there is probably no direction in which the Committee can render more effective aid to the cotton breeder than in providing him with authoritative reports on the spinning value of his experimental cottons. But the study of fibre characters and their bearing on spinning value in the Research Laboratory is an equally important aspect of our work, and provision has been made for considerable development in this direction. As results indicating the bearing of the various measurable characters of the fibre on the spinning value are obtained it should be possible to design laboratory methods which will supplement, and in the early stages of plant breeding work perhaps even replace, the actual spinning test. Further a very careful examination of the subject by the Research Sub-Committee has indicated the great need for the analysis of spinning value from the plant-breeder's standpoint. The work of recent years in various parts of the world has resulted in a considerable amount of information as to the factors determining the agricultural yield of cotton, but much less work has been done on the factors which determine quality. There is thus a wide field of work before the Laboratory.

No account of the work of the Laboratory would be complete without an acknowledgment of the valued assistance received from several members of the East India Cotton Association who have undertaken the grading of the various samples of cottons submitted to the Laboratory for spinning trials. The grader's report has formed an integral part of the reports on new cottons.

The Laboratory has also carried out, during the year, an investigation of some magnitude in connection with the fumigation of American cotton for the prevention of the introduction of the Boll Weevil, the results of which are referred to elsewhere in the report.

RESEARCH STUDENTS.

Eight research students were appointed in February who took up their studentships in April 1925—one has since resigned. A complete list of the Committee's research students showing in which branch of cotton research they are engaged and where they are posted will be found in Appendix XIV.

One of the students appointed in September 1923 has recently been appointed as an Assistant Mycologist in connection with the Central Provinces research scheme, and at the end of the year proposals for similar

employment for four others were under consideration. One research student has also been appointed Junior Physicist on the staff of the Technological Laboratory. It was decided during the year that a limited number of senior research studentships should be awarded in future in addition to the usual annual appointment of six junior research students.

SECRETARY'S TOURS.

The Secretary was on duty at the headquarters of the Government of India on several occasions in connection with the Cotton Ginning and Pressing Factories Act and the rules under the Act. Visits were also paid to Cawnpore, Layallpur, Lahore, Coimbatore, Madras, Surat, Dharwar and Indore in connection with the Committee's research schemes and to attend meetings of Provincial Cotton Committees.

COLLECTION AND SUPPLY OF INFORMATION.

As was done last year, a note on the recent progress in the introduction of improved varieties of cotton has been contributed to the *Bombay Cotton Annual* which is published by the East India Cotton Association. The substance of this is reproduced in Appendix XV.

The Committee is again indebted to the British Cotton Industry Research Association for the supply of their weekly summary of current literature in which abstracts appear of all work published in connection with cotton growing and cotton technology and reference is made to the scientific work bearing on these subjects, and also for the supply of copies of the Shirley Institute Memoirs.

To the Empire Cotton Growing Corporation the Committee are also indebted for the supply to the library and to members of the Committee copies of their own proceedings, of special reports obtained by them on cotton prospects in other parts of the Empire and of their *Review* which is published quarterly. They have also supplied us with a considerable amount of information in regard to special cotton legislation in other countries.

The Committee has in addition a large circle of Government Departments and public bodies, interested in cotton, both within and outside the Empire with whom an exchange of publications is made.

The Committee has published during the year the following bulletins :—

1. The Technological Research Laboratory of the Indian Central Cotton Committee.

2. Some recent important speeches in connection with the improvement of cotton growing in India.

3. Conduct of spinning tests in the Technological Laboratory.

As soon as a Deputy Secretary is appointed the abstracting of Indian agricultural literature on cotton investigations will be undertaken and abstracts published in the *Agricultural Journal of India.* The object of these abstracts is to provide for those engaged in research or development work connected with cotton growing, more convenient means of reference to the work being carried out in different parts of India than are available at present.

Annual Report of the Director, Technological Laboratory, Matunga, 1924-25.

In the last Annual Report a general account was given of the objects of the Technological Laboratory and of the means and methods by which it was proposed to make the attempt to accomplish these objects. A noteworthy event of the year was the visit of His Excellency the Viceroy who, on December 3rd, 1924, formally opened the Spinning Laboratory and laid the foundation-stone of the Research Laboratory. During the year under review considerable progress has been made in all directions, as the detailed account below will show. The various details may be considered under the four following heads :—

I. Spinning Laboratory—Buildings and equipment.
II. Research Laboratory—Buildings and equipment.
III. Staff.
IV. Work of the Technological Laboratory.

I. Spinning Laboratory—Buildings and Equipment.

As regards the Spinning Laboratory building, there is little to add to the description given in last year's report.

The most notable feature of new equipment is the installation of the Carrier Humidifying System. The plant was ready at the end of May and tests conducted during the monsoon amply demonstrated that under the conditions then prevailing the Company's guarantee was easily fulfilled. Further tests will be made during the cold weather (January-February)—when the conditions are the most onerous so far as the plant is concerned—and also later, during the hot weather (April-May). There can, however, be no doubt as to the general efficacy of the plant : and conditions in the Spinning Laboratory since the plant was installed have been far more satisfactory than at the corresponding period in the previous year. It may be added that the Carrier Company guarantees that the relative humidity will be automatically maintained within 2 per cent, and the temperature within 2° F. of the values for which the controls are set.

II. Research Laboratory—Buildings and Equipment.

The new Research Laboratory was completed by the end of the monsoon, 1925 : a brief account of the allocation of the floor space, together with a block plan, was given in the last Annual Report. The various labora-

tory services—water, drainage, electricity and gas—have been satisfactorily provided ; they are in all cases taken round the walls of the rooms so as to allow the maximum adaptability of the rooms to other purposes than those for which they are being used initially, in view of the fact that the expansion of the Laboratory's activities may at some future time render such adaptability desirable.

The new laboratory was actually occupied on September 28th, 1925, the whole of the furniture, equipment and apparatus being removed from the temporary laboratory in the Victoria Jubilee Technical Institute on that date. Normal working was resumed in the new laboratory on the following day. In actual working the new laboratory has been found quite satisfactory, being lofty, spacious, well-lighted, and generally airy. The floors of the various rooms have been tiled with square red tiles of eight-inch side except the experimental workshop, which has been paved with Tandur stone.

It had been found that the laboratory furniture on the " unit " principle was both economical in cost and very suitable for the needs of the laboratory. The additional furniture required for the new building was therefore obtained to the same patterns.

A small instrument makers' workshop has been provided to enable as much apparatus as possible to be made on the spot. It is fitted with one 6-inch Selson lathe, one $3\frac{1}{2}$-inch Drummond lathe, one 6-inch shaping machine, one sensitive drilling machine, one wet and dry grinding machine, one power hack-saw, and the usual workshop bench and hand tools. The power is taken from a 5 h.p. motor driving a floor shaft through a worm reduction gear, the countershafts being mounted on a plank carried by beams let into the outside south wall.

The great amount of testing work which has had to be carried out has necessitated the provision of additional testing appliances, *viz* :—

One Goodbrand Twist Tester.
One Goodbrand Single Thread Tester.
One Balls Sorter.
One Bunge Micro-balance.

III. Staff.

As the Laboratory began to fulfil the functions for which it had been instituted, it became increasingly evident that more staff would be necessary to cope with the large amount of testing work which arose from the numerous demands for spinning tests. A note was presented to the Committee

at its meeting in February 1925, on the organisation necessary for carrying out with maximum efficiency the spinning tests and the accessory tests. The necessity for co-ordinating the work of the testing room with that of the spinning room was discussed, and the number of staff indicated which was needed to make effective the scheme propounded. It was felt at the time that for testing work of this kind non-graduate assistants might be appointed who would be able, under proper supervision, to carry out the testing work satisfactorily. The experiment was accordingly tried a little later, when some vacancies occurred in the testing staff, and it proved to be quite successful. The whole matter of the staffing of the Technological Laboratory was gone into by the Committee at its meeting in July when sanction was given to a system of grading the staff and for certain additional appointments.

The following is the sanctioned scale :—

Director.
Spinning Master.
3 Senior Research Assistants.
3 Junior ,,
1 Head Tester.
1 Statistician.
1 Senior Tester (two while no Head Tester).
10 Junior Testers and Routine Assistants.
Electrician.
1 Draughtsman.

IV. Work of the Technological Laboratory.

1. *Spinning Tests.*—Considerable progress has been made during the past year in the work of the laboratory. From the very first when the resources of the laboratory became available they have been taxed to the utmost. In the last Annual Report a statement was made of the records which it was proposed to keep for each spinning test. Except for one or two items on which some research is necessary these have been maintained in a systematic manner, with full details, from the commencement. There is no doubt that the greatest advantages of these records will be reaped in future years ; for example, they will be invaluable when analyses have to be made of the behaviour of different cottons over a series of years. These records comprise all possible particulars of the machinery, the material, and the physical conditions under which the spinning and yarn tests are carried out. As an example of the thoroughness with which these records are kept, the recording of the temperature and relative humidity may be

cited. Readings are taken hourly from 8 a.m. to 5 p.m. of four ordinary wet and dry bulb hygrometers, one of which is in the blow room, two in the main spinning room, and one in the testing room. In addition, hourly readings of a whirling hygrometer are also taken near the positions of the stationary wet and dry bulb hygrometers. The whirling hygrometers have been made to a special pattern having a very open scale specially suited for the conditions of their use in the laboratory. These readings are supplemented by the readings of two continuously recording hair hygrographs so as to indicate changes of humidity during the night when the plant is not working but when cotton is usually on the machines and may therefore be affected in condition. A thermo-hygrograph which will give continuous records of temperature as well as of humidity is being added to this equipment. All charts from these instruments are suitably labelled and filed. The whirling hygrometers and the hygrographs are calibrated against an Assmann Psychrometer which itself is provided with standardised thermometers of a very open scale type specially made for use in the laboratory. These readings were available for many months before the humidification plant was installed ; they now serve as a check upon this plant in the rooms humidified by it.

A good deal of attention has been given to the storage of samples. The present practice is to keep a sample of the raw cotton, and of the cotton in the stages of sliver, slubbing, intermediate, roving, hank-roving, and yarn. Each sample is placed in a tin having a false bottom ; the bottom of the tin is removable and contains quicklime to keep the material in a dry condition ; the false bottom consists of perforated sheet metal across the bottom of the middle portion of the tin ; a circle of cotton duck fits above this bottom in order to prevent lime-dust rising into the middle of the tin where the material is kept securely wrapped in a good quality paper. The tin is provided with a deep lid. By this means and by making occasional changes of the lime, it is hoped to keep the material in good condition. The tins are of various sizes, being designed to take the various sizes of bobbin, etc., and they are systematically arranged in racks specially designed to hold them. There can hardly be any doubt as to the necessity for some such procedure as that described in view of the well-known fact that changes in colour occur in cotton which has been stored for some time. Whether corresponding changes occur in other properties is a most important matter which it is intended to investigate as soon as opportunity offers.

2. *Standard Indian Cottons.*—Reference was made in the last Annual Report to the tests on the standard Indian cottons on which it was proposed to concentrate for a time. It was found, however, that there were so many

problems on which these tests could be utilised to throw light that it was not possible to make as much progress as had been desired. Of the 1923-24 crop, the following cottons were available :—

1. Dharwar No. 1.
2. Gadag No. 1.
3. Surat 1027 A.L.F.
4. Punjab-American 285 F.
5. Coimbatore 1 (Cambodia 295).
6. Nandyal 14.
7. Hagari 25.
8. Karunganni.

Of these it was only found possible to complete the tests on 3 (Surat 1027 A.L.F.), 4(Punjab-American 285 F.), 5 (Coimbatore 1) and 8 (Karunganni). Early in 1925 a preliminary bulletin was issued showing the results which had been obtained on the first three of these cottons. It was accompanied by an explanatory note indicating the purposes for which the tests had been conducted, and describing at some length the procedure adopted in making the spinning tests and the accessory tests. In response to an invitation for comments on the bulletin some useful suggestions for improvement were received, which will be embodied in the standard form which has, as a consequence, now been adopted for reporting the results of the spinning tests. A copy of this form* is shown in the appendix to this report. In addition to the items there shown the full report on a sample contains the results of the examination of the raw cotton in the Research Laboratory, the grader's report, as well as a report on those properties which are judged from the appearance of the yarn on the yarn examining machine.

While making these tests on the standard cottons it is sought to obtain answers to a number of ancillary questions of the greatest importance. The first of these questions is—What is the minimum weight of sample which can safely be taken for the spinning test without endangering the trustworthiness of the test ? This matter is of supreme importance because cotton breeders wish to have tests on their cottons made at as early a stage as possible in their work, when in the nature of the case only small weights are available. They would be considerably hampered in their work—on account of the time, staff, and land necessary—if they were required to furnish, say, at least 100 lbs. of each cotton which it was desired to test. It is commonly believed by mill managers and others whose long experience of mill practice certainly entitles their opinion to respect, that it is impossible to make a satisfactory spinning test on a less weight than 100 lbs. But while this is probably true for the

* See page 34.

mill, where the conditions ordinarily prevailing make it practicallyimpossible to adapt the procedure to the testing of a small weight of a special cotton, it cannot therefore be laid down as an axiom that under all conditions whatsoever tests on small weights of cotton must necessarily be unsatisfactory or at any rate untrustworthy. Indeed, experience elsewhere of small spinning plants specially erected for dealing with small weights of cotton all points in the other direction. It was with a view to gaining really definite information on the subject that spinning tests have accordingly been made in the Technological Laboratory on the standard cottons on weights of 100 lbs., 10 lbs., 5 lbs. (2 lots), and 2 lbs. (2 lots), respectively. So far as the results already obtained are concerned, they indicate that the duplicate samples of 5-lb. weight give, as nearly as could be expected, the same results as the 100-lb. samples. Even the duplicate 2-lb. samples have been found to give very similar results to those given by the larger samples, especially in the latest tests where the benefit of past experience is obtained. But the very greatest care in manipulation of such small samples is a *sine qua non*. With the ordinary care of the trained operative staff, the tests on 5-lb. samples appear to be quite reliable. The whole situation will be reviewed at a later date when the results of tests on the other standard cottons are also available.

These tests on the standard cottons have been so designed that they will incidentally throw some light on the two other questions—(*i*) the deterioration of cotton on storage; and (*ii*) the effect of the physical conditions—temperature and humidity—under which the spinning tests are carried out. Knowledge on these matters is most desirable. Not only does it possess an intrinsic general interest and importance, but from the point of view of the Technological Laboratory such knowledge is essential, because it may prove necessary to make repeat tests on a sample some time after the original tests were made, and then the possibility of effects due to deterioration on storage or to differences in the conditions of testing would have to be faced. The installation of the Carrier system of humidification in the Spinning Laboratory renders it possible to have standard conditions of temperature and humidity all the year round; but as the cost of dehumidifying plant is prohibitive the standard conditions must be so chosen that even in the monsoon they may still be maintained. Such conditions are a temperature of 92° F. and a relative humidity of 70 per cent. These conditions in the Spinning Laboratory occasion much personal discomfort to the staff so that it is most desirable to avoid if possible their adoption as all-the-year-round conditions. It would be an obvious benefit to work

under those conditions which ensure the maximum of comfort without vitiating the spinning tests. The tests on the standard cottons, together with the control of conditions which can be exercised by means of the Carrier plant, will yield information which will enable this to be done.

3. *Tests for Agricultural Departments.*—Early in 1925, there came a great rush of samples to be tested for Agricultural Departments which practically put an end to the testing of the standard cottons until the end of the year. The following statement of cottons tested for the various Agricultural officers gives some idea of the work done in this direction :—

(1) *The Cotton Breeder, Dhulia.*—Four Khandesh cottons, of which three were new types, to be compared with N. R. cotton (*Gossypium neglectum, Var. Roseum*).

(2) *The Cotton Breeder, Sind.*—Four samples of American types.

(3) *The Cotton Breeder, Surat.*—Seven samples, three being new types under experimental cultivation, the others being controls.

(4) *The Cotton Breeder, Dharwar.*—Five samples—Dharwar No. 1, Gadag No. 1, " Farm " Kumpta, and two new types.

(5) *Assistant Economic Botanist, Cawnpore.*—Six samples of which four were new cottons, the other two samples being controls.

(6) *Deputy Director of Agriculture, Aligarh, U. P.*—One sample of Aligarh white flower cotton.

(7) *Economic Botanist, Central Provinces*—Three samples, two improved types being compared with a local *Roseum* control.

(8) *Cotton Specialist, Madras.*—Two samples, one being a new strain of Cambodia cotton for comparison with the standard Co. 1.

(9) *Deputy Director of Agriculture, Bellary, Madras.*—Four samples two being new strains tested against local Mungari and Sircar 25 respectively as controls.

(10) *Director of Agriculture, Punjab.*—Fourteen samples, of which four were samples of 4F grown under different conditions and the remaining ten samples were the cottons 4F and 285F, with various admixtures of Desi cotton.

(11) *Miscellaneous Tests.*—Spinning tests have also been carried out : (1) on Surat 1A cotton to determine how the behaviour of the lint from impure seed compared with that from pure farm seed ; (2) on three Persian cottons.

4. *Research Laboratory.*—The work in the Research Laboratory has been co-ordinated with that in the Spinning Laboratory. Determinations of staple length and of the distribution of staple length in any given sample are invariably carried out on every cotton submitted for test. These determinations are made by means of two instruments known respectively as the Balls Sorter and Baer Sorter, the results from the two instruments giving mutual checks. Measurements are also made by means of the microscope of the staple length, the fibre width, and the number and distribution of the natural twists in the cotton fibre known as convolutions. Additional tests on the raw material are being arranged for, such as the measurement of staple strength. The work in this direction will naturally expand now that the increased facilities of the new Research Laboratory are available. It is by the accumulation of the results of measurements of this kind and their subsequent statistical analysis that it is hoped to solve the problem as to the relation between the properties of a cotton and its spinning value. Another line of research is concerned with the investigation of the various yarn tests with a view to obtaining speedier testing without any sacrifice of accuracy. Some work in this direction has already been begun.

5. *Cotton Boll Weevil.*—During the present year the experimental work on the fumigation of American cotton was brought to a successful conclusion. A further practical experiment was carried out on a barge using a rubbered balloon fabric as a hatch cover. This effectually solved the previously encountered difficulty of preventing leakage of hydrocyanic acid gas from the hatch. After the hatch had been proved to be comparatively gas-tight a batch of 70 bales of American cotton was placed in the hatch for fumigation. It was then discovered that a great fall in concentration occurred immediately the charges of hydrocyanic acid gas were given. The results could only be explained by assigning an absorbent rôle to the bales of cotton. Experiments in charging and discharging the gas proved that not only did the bales absorb the gas readily, but that they also desorbed it equally readily. It was found that about one pound of sodium cyanide and a corresponding quantity of concentrated sulphuric acid were required for the fumigation of every three bales of cotton. This experiment showed conclusively that the fumigation of American cotton on barges was a practical possibility. As a direct consequence of this work, taken in conjunction with the experimental work in the Technological Laboratory, the Government of India was able to issue a notification under the Destructive Insects and Plant Diseases Act prohibiting the importation of American cotton except at the port of Bombay and except after fumigation at that port with hydrocyanic acid gas.

The experiments made at the Technological Laboratory itself were on two different scales. In one set of experiments were used a large wooden box having a capacity of 57 cubic feet, and, later, a cylindrical iron tank having a capacity of 66 cubic feet. By means of a chamber of this size the observations on the barge were confirmed on a single bale of cotton. The most useful piece of apparatus, however, was the small scale apparatus which was devised, using a large desiccator of some 10 litres capacity as the fumigating chamber. By the use of this apparatus a wide range of experiments was made possible from which the following conclusions were drawn:—

(1) It is necessary to expose the grain weevil, Calandra, to an atmosphere containing about 150 parts of hydrocyanic acid gas per 100,000 parts of air for about 20 hours in order to ensure killing it outright.

(2) The actual lethal concentration and time of exposure for Calandra depend upon the temperature and possibly, to a much less extent, upon the humidity. When the temperature is above 85° F. the weevils are much more easily killed. Thus, in a typical case, at 88°-89° F. an exposure of 12 hours to a concentration of 140 parts per 100,000 sufficed to kill outright the 20 weevils used in the experiment, whereas at 82° F. after an exposure of 16 hours to a similar concentration one out of 20 weevils subsequently revived, although this one also died some hours later. Very similar results both as to the concentration and time of exposure necessary, as well as the effect of temperature, have been obtained by the American authorities who have at our request repeated these experiments on the cotton boll weevil itself.

(3) Cotton, whether baled or in the loose state, rapidly absorbs a certain amount of hydrocyanic acid gas, and also rapidly desorbs it.

(4) Cotton which had been dried over concentrated sulphuric acid had a higher and more rapid absorptive power than cotton which had been placed in a moist atmosphere.

(5) The absorptive power of cotton remains practically unchanged throughout the range of temperature 86° F.—104° F.

(6) Jute—as used for gunny coverings of cotton bales—has a much higher and more rapid absorptive power than cotton.

(7) The absorptive power of jute is not greatly affected by its moisture content.

(8) The absorptive power of jute is practically independent of the temperature.

A full account of these fumigation experiments is in course of preparation.

SPINNING TEST RESULTS.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
				Waste Percentages				Spinning Particulars.							Yarn Test Results.							Temperature.	Relative Humidity.	
Sample No.	Cotton.	Counts Nominal.	Weight of Sample.	Blow Room Loss.	Card Room Loss.	Spinning Loss.	Total Loss.	Card Production per Hour.	Ring Frame Production per Spindle per 10 hrs.	Ring Frame Yarn Breakages per 0z. Yarn.	Ring Frame Front Roller Speed R. P. M.	Ring Frame Front Roller Diameter Inch.	Ring Frame Draft.	Ring Frame turns per Inch.	Counts Actual.	Lea Strength lbs.	Single Thread Strength ozs.	Single Thread Irregularity. %	Single Thread Weakness Percentage.	Turns per Inch Actual.	Single Thread Extension. %	Spinning Room oF.	Spinning Room %	Testing Room %

APPENDIX I.

OPINIONS RECEIVED FROM THE BOMBAY MILLOWNERS' ASSOCIATION.

I. I have just been reviewing our cotton purchases for the year which is now ending, and as we are often asked as to what effect the Cotton Transport Act has had, it will perhaps interest you to know that in 1924 we purchased for our mills something like four times the quantity of Compta cotton than we have done in any previous year ; and this is entirely due to the fact that owing to the application of the Act, Compta cottons were better in class and staple and quality generally. The absence of mixed cotton, which had previously been tendered in Comptas, was remarkably noticeable, as we have never had to complain of mixed staple.

II. Although we have our ginning factory in Hubli we still had occasion to buy about 2,000 bales in 1924 of Compta cotton in the Bombay market for our warp mixing and our experience was the same as the above. Had the cotton been of a mixed variety as before we would have refrained from buying locally for our warp mixing.

III. I agree that there is a marked improvement in the quality of Compta cotton and most of the credit is due to the working of the Cotton Transport Act.

IV. The Transport Act is a sound piece of legislation and has done enormous good to the Compta cotton.

V. My experience is the same as that of the above gentlemen. The Act has proved a success.

VI. I have also noticed a distinct improvement in the Compta cotton and I feel it is due to the new legislation.

VII. My experience as a gin and press owner in the Surat district confirms the views expressed by the above gentlemen though for different reasons. Since the legislation, inferior cotton is not allowed to be transported to superior cotton centres and therefore superior cotton fetches its intrinsic value. In Surat district growers are now growing more superior cotton which is sold as farm cotton.

VIII. Other members endorse the above remarks.

APPENDIX II.

COTTON TRANSPORT ACT IN MADRAS.

The original notification was approved by resolution passed by the Madras Legislative Council on the 26th of August, 1925, and amended on the 18th of November, 1925. The amended notification is given below :—

FORT ST. GEORGE, *November* 18, 1925.

(G.O. PRESS No. 1657, DEVELOPMENT.)

NOTIFICATION UNDER SECTION 3 OF THE COTTON TRANSPORT ACT, 1923 (III OF 1923), AS AMENDED BY ACT No. XXXIV OF 1925.

No. 344.—Whereas it is necessary for the purpose of maintaining the quality and reputation of the cotton grown in the areas in the Madras Presidency mentioned in Schedule I hereto appended.

Now, therefore, in exercise of the powers conferred by sub-section (1) of Section 3 of the Cotton Transport Act, 1923 (III of 1923), as amended by Act No. XXXIV of 1925, the Government of Madras are hereby pleased to prohibit the import of cotton into the said areas by rail and sea save under and in accordance with the conditions of a licence prescribed in this behalf, subject however to the exception specified in clause (3) below.

(2) The Government of Madras are further pleased to prohibit, under sub-section (2) of Section 3 of the said Act, the delivery to, and the taking of delivery by, any person, at any railway station situated in any of the protected areas and specified in Schedule II hereto appended, of any cotton when such cotton has been consigned from a railway station not situated in the said area unless such person holds the prescribed licence for the import of cotton into the said area, subject however to the exception specified in clause (3) below.

(3) The transport of cotton lint into Tiruppur-Cambodia protected area as defined in Schedule I from the districts of North Arcot, South Arcot, Chittoor and Chingleput and from the Atur, Dharmapuri, Hosur, Krishnagiri, Omalur, Salem and Uttangarai taluks of Salem district is exempted from the operation of clauses (1) and (2) and permitted without restriction.

SCHEDULE I—PROTECTED AREAS.

I. *The Northerns and Westerns area.*—Consisting of the districts of Anantapur, Bellary, Cuddapah and Kurnool.

II. *The Tiruppur-Cambodia area.*—Consisting of the district of Coimbatore, the Karur, Musiri and Kulittalai taluks of Trichinopoly district, the Namakkal, Tiruchengodu and Rasipur taluks of Salem district and that portion of the Madura district lying to the north and west of the Vaigai River.

III. *The Tinnevelly area.*—Consisting of the district of Tinnevelly and that portion of the districts of Ramnad and Madura lying to the east and south of the Vaigai River.

SCHEDULE II—RAILWAY STATIONS.

I. *The Northerns and Westerns area.*—All stations from Kottur to Hospet both inclusive, from Rayadrug to Bellary both inclusive, from Hospet to Guntakal both inclusive, from Guntakal to Hindupur both inclusive, from Guntakal to Tungabhadra River both inclusive, from Dharmavaram to Tanakallu both inclusive, from Guntakal to Cumbum both inclusive on the Guntakal-Bezwada line, from Dhone to Kurnool both inclusive and from Guntakal to Settikunta both inclusive.

II. *The Tiruppur-Cambodia area.*—All stations from Podanur to Kallar both inclusive, Madukarai and all stations from Podanur to Pollachi both inclusive, from Podanur to McDonald's Choultry both inclusive, from Madura bridge to Samudram both inclusive and from Erode to Marudur both inclusive.

III. *The Tinnevelly area.*—All stations from Maniyachi to Madura both inclusive, from Maniyachi to Tenkasi both inclusive, from Maniyachi to Tuticorin both inclusive, from Tinnevelly to Tiruchendur both inclusive and from Madura to Mandapam both inclusive.

RULES UNDER SECTION 7 OF THE COTTON TRANSPORT ACT, 1923 (III OF 1923), AS AMENDED BY ACT No. XXXIV OF 1925.

No. 345.—In exercise of the powers conferred by Section 7 of the Cotton Transport Act, 1923 (III of 1923), as amended by Act No. XXXIV of 1925, the Government of Madras are pleased to make the following rules to carry out the purposes of the said Act, namely :—

(1) *Licensing authority : form of application for a licence.*—Licences for the import of cotton by rail and sea into the protected areas shall be granted by the Director of Agriculture, Madras Presidency, or such other officer as may be authorized by him in this behalf, and application shall be made to that officer in Form A annexed to these rules.

(2) No cotton of which the import has been prohibited by or under Section 3 of the Cotton Transport Act, 1923, as amended by Act No. XXXIV of 1925, shall be imported into a prohibited area by sea save under and in accordance with the conditions of a licence issued as provided by these rules.

(3) *Licences for import of cotton for manufacture and export.*—

(*i*) Annual licences for import by rail shall be granted to manufacturers and exporters carrying on business within the protected area for the importation of cotton or of any specified kind of cotton from outside such area for manufacture and export to any port or ports outside India respectively. Such licences shall be in Form B hereto annexed and shall be subject to the conditions stated therein.

(*ii*) A certified copy of such licences in Form C hereto annexed shall be tendered with each consignment at the despatching station and shall accompany the railway invoice to the station of delivery and shall then be forwarded by the railway authority concerned to the railway audit office for despatch to the Secretary, Indian Central Cotton Committee.

(*iii*) The licence shall be returned to the licensing authority at the expiration of the period for which it is granted together with all unused certified copies of the same.

(4) *Licence for particular consignment by rail.*—

(*i*) A single licence to cover only one consignment may be granted to such persons as can satisfy the licensing authority that it is necessary to import cotton or any specified kind of cotton (that is, cotton seed, kapas, ginned cotton or cotton waste) into the protected area. Such licences shall be in Form D hereto annexed and shall be subject to the conditions stated therein.

(*ii*) Such licence shall be surrendered at the station of delivery to the Station Master or other railway servant responsible for the receipt and delivery of goods and parcels at the time of taking delivery of the cotton covered by the licence who shall forward it to the licensing authority.

(*iii*) A certified copy of such licence in Form E hereto annexed shall be tendered with each consignment at the despatching station and shall accompany the railway invoice to the station of delivery and shall then be forwarded by the railway authority concerned to the railway audit office for despatch to the Secretary, Indian Central Cotton Committee.

(5) *Licence for particular consignment by sea.*—

(*i*) A single licence to cover only one consignment may be granted to such persons as can satisfy the licensing authority that it is necessary to import cotton or any specified kind of cotton (that is, cotton seed, kapas, ginned cotton or cotton waste) by sea into the protected area. Such licences shall be in Form F annexed and shall be subject to the conditions stated therein.

(*ii*) Such licence shall be delivered at the place specified by the licensing authority to the officer mentioned in the licence, who shall forward it to the licensing authority.

(6) *Separate licences to be issued for different kinds of cotton.*—Separate licences shall be issued for different kinds of cotton, that is to say, for ginned cotton, cotton seed, unginned cotton (kapas) and cotton waste.

(7) *Penalty.*—Any contravention of these rules or of the conditions of any licence granted hereunder, not otherwise punishable under the said Act, shall be punishable on conviction by a Magistrate with fine which may extend to five hundred rupees.

FORM A.

Application for Licence.

(See Rule 1.)

To

The Director of Agriculture,
Madras Presidency.

Sir,

$\frac{\text{I}}{\text{We}}$ the undersigned hereby beg to apply for a licence under the Cotton Transport Act, 1923 (Act III of 1923), as amended by Act

No. XXXIV of 1925, available for the period of to for the importation by rail/sea of bales/maunds of * into the protected area known as notified in Government Notification, Development Department, No. 344, dated 18th November, 1925, at station for the purpose of

I/We so beg to apply for a certified copy of the licence (as required by the said Act).

2. I/We declare that such cotton/kapas/cotton seed/waste is required for the purpose of* only and will not be otherwise used save under the instructions of the licensing authority.

Reasons why importation is necessary (*a*).

3. I/We undertake :—

(1) in the event of the cotton/kapas/cotton seed/waste imported under the said licence proving unsuitable for the purpose for which it is imported, to report the matter to the licensing authority and to await his approval to its disposal otherwise before allowing such cotton/kapas/cotton seed/waste to leave my/our premises ;

(2) that under no circumstances will I/we allow cotton/kapas/cotton seed/waste imported under the said licence to be used for mixing with, or adulteration of cotton/kapas/cotton seed produced in the protected area for re-export nor will I/we allow it to be re-exported under a misdescription ;

(3) to return the said licence on expiration of the period for which it is granted to the licensing authority together with such details as he may require as to the cotton/kapas/cotton seed/waste imported under it and of its subsequent disposal.

Dated (Signed)
at

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* State whether ginned cotton, unginned cotton (kapas), cotton seed or cotton waste.

(*a*) Reasons should be clearly stated as licences are only issued in cases of proved necessity. In the case of applications for licences to import by sea, the form should be modified as may be necessary.

INSTRUCTIONS.

(*a*) The Cotton Transport Act does not impose any general restriction on cotton transport but only on transport into specified areas (notified by Local Governments for protection) by rail, road, river and sea or by one or more of such routes. The notifications issued by the Government of Madras only prohibit transport by rail and sea and not transport by road and river. Each notification includes a schedule of railway stations in the protected area to which it refers. Licences are only required by concerns situated within the limits of a protected area. Licences granted under the Cotton Transport Act are available for the importation of cotton from anywhere in India but only to the stations specified.

(*b*) Cotton, as defined in the Act, includes ginned cotton, unginned cotton (kapas), cotton seed and cotton waste, but separate licences are required for each. Separate rules are also in force for the importation into protected areas of cotton by sea.

(*c*) Station Masters or other railway servants responsible for the booking of goods or parcels at all stations in India are *empowered* by Section 4 of the Act to refuse to book cotton to a notified station in a protected area unless a certified copy of the licence is handed in when the cotton is tendered for booking. Each consignment requires a separate certified copy which will accompany the railway invoice to destination.

(*d*) Station Masters or other railway servants responsible for the receipt and delivery to the consignee of goods and parcels at notified stations are *required* by Section 5 of the Act to refuse delivery of cotton from outside the protected area (which is defined by a list of stations) unless accompanied by a certified copy of the licence (or unless the original licence is produced).

(*e*) Paragraph 2 in the application form corresponds with condition (*b*) of the licence, the object being to safeguard the protected area against the misuse (which might be quite unintentional) of cotton imported under licence.

(*f*) The protected areas notified in the Madras Presidency are those contained in Government Notification, Development Department, No. 344, dated 18th November, 1925.

FORM B.

Annual General Licence (for Manufacturers and Exporters).

(See Rule 3.)

No. of 192 .

Under the Cotton Transport Act, 1923 (Act III of 1923), as amended by Act No. XXXIV of 1925, the $\frac{\text{Mills}}{\text{Company}}$ carrying on business within the protected area known as notified in Government Notification, Development Department, No. 344, dated 18th November, 1925, are hereby granted a general licence under Section 3 of the said Act for the period February 1, 192 , to January 31, 192 , to import by rail $\frac{\text{bales}}{\text{maunds}}$ of * to station for the purpose of $\frac{\text{manufacture}}{\text{export to any port or ports outside India}}$ subject to the following conditions :—

---

*Here enter ginned cotton, cotton waste, kapas or cotton seed for which licence is granted.

(*a*) A certified copy of this licence shall be tendered with the consignment at the despatching station.

(*b*) Cotton imported under this licence shall not be used except for the purpose stated above, save under the instructions of the licensing authority.

(Signed)

Licensing Authority.

Dated 192 .

This certified copy should accompany the invoice to the railway audit office and should be despatched from there to the Secretary, Indian Central Cotton Committee, Bombay.

FORM C.

Certified copy of General Licences (for Manufacturers and Exporters) to be tendered at Despatching Stations.

(See Rule 3.)

Licence No. 192 ; Copy No.

Under the Cotton Transport Act, 1923 (Act III of 1923), as amended by Act No. XXXIV of 1925, the $\frac{\text{Mills}}{\text{Company}}$ carrying on business within the protected area known as notified in Government Notification, Development Department, No. 344, dated 18th November, 1925, are hereby granted a general licence under Section 3 of the said Act for the period February 1, 192 , to January 31, 192 , to import by rail $\frac{\text{bales}}{\text{maunds}}$ of * to station for the purpose of $\frac{\text{manufacture}}{\text{export to any port or ports outside India}}$ subject to the following conditions :—

(*a*) A certified copy of this licence shall be tendered with the consignment at the despatching station.

(*b*) Cotton imported under this licence shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Signed)

Licensing Authority.

Name of Consignor
Number of bales
Description of cotton

Signature of Consignor.
Signature of Station Master.

Dated 192 .

FORM D.

Single Licence for Consignment by Rail.

(See Rule 4.)

Under the Cotton Transport Act, 1923 (Act III of 1923), as amended by Act No. XXXIV of 1925, $\frac{\text{Messrs.}}{\text{Mr.}}$ $\frac{\text{are}}{\text{is}}$ granted a licence to import to station situated in the protected area known

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* Here enter article.

as notified in Government Notification, Development Department, No. 344, dated 18th November, 1925, bales/maunds of * from (*station*) for the purpose of

This licence is only valid for one consignment and shall be surrendered to the undersigned, duly endorsed by the Station Master of the station of delivery or other railway servant responsible for the receipt and delivery of goods and parcels at the station on the arrival of the consignment :—

(*a*) A certified copy of this licence shall be tendered with the consignment at the despatching station.

(*b*) Cotton imported under this licence shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Signed)

Licensing Authority.

Dated 192 .

This certified copy should accompany the invoice to the railway audit office and should be despatched from there to the Secretary, Indian Central Cotton Committee, Bombay.

FORM E.

Certified copy of Single Licence in Form D.

(See Rule 4.)

Licence No. of

Under the Cotton Transport Act, 1923 (Act III of 1923), as amended by Act No. XXXIV of 1925, Messrs./Mr. are/is granted a licence to import to (station) situated in the protected area known as notified in Government Notification, Development Department, No. 344, dated 18th November, 1925, bales/maunds of * from (station) for the purpose of

This licence is only valid for one consignment and shall be surrendered to the undersigned, duly endorsed by the Station Master of the station of delivery or other railway servant responsible for the receipt and delivery of goods and parcels at the station on the arrival of the consignment :—

(*a*) A certified copy of this licence shall be tendered with the consignment at the despatching station.

(*b*) Cotton imported under this licence shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Signed)

Licensing Authority.

Name of Consignor
Number of bales
Description of cotton

Signature of the Consignor.
Signature of the Station Master.

Dated 192 .

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* State whether ginned cotton, cotton waste, kapas or cotton seed.

FORM F.

Single Licence for Consignment by Sea.

(See Rule 5.)

Under the Cotton Transport Act, 1923, as amended by Act No. XXXIV of 1925, Messrs./Mr. are/is granted a licence to import to situated in the protected area known as notified in Government Notification, Development Department, No.344, dated 18th November, 1925, bales/maunds of from for the purpose of

This licence is only valid for one consignment and shall be surrendered to the officer in charge of the at on the arrival of the consignment:—

Cotton imported under this licence shall not be used except for the purposes stated above, save under the instructions of the licensing authority.

(Signed)

Licensing Authority.

APPENDIX III.

The following Act of the Indian Legislature received the assent of the Governor-General on the 18th March, 1925, and is hereby promulgated for general information :—

ACT No. XII OF 1925.

An Act to provide for the better regulation of Cotton Ginning and Cotton Pressing Factories.

Whereas it is expedient to provide for the better regulation of cotton ginning and cotton pressing factories ; It is hereby enacted as follows :—

Short title, extent and commencement.

1. (1) This Act may be called the Cotton Ginning and Pressing Factories Act, 1925.

(2) It extends to the whole of British India (except Burma), including British Baluchistan and the Sonthal Parganas.

(3) It shall come into force on such date as the Governor-General in Council may, by notification in the *Gazette of India*, appoint.

Definitions.

2. In this Act, unless there is anything repugnant in the subject or context,—

(*a*) " bale " means any pressed package of cotton of whatever size or density ;

(*b*) " cotton " means ginned or unginned cotton, or cotton waste ;

(*c*) " cotton ginning factory " means any place where cotton is ginned or where cotton fibre is separated from cotton seed by any process whatever involving the use of steam, water or other mechanical power or of electrical power ;

(*d*) " cotton pressing factory " means any factory as defined in the Indian XII of 1911. Factories Act, 1911, in which cotton is pressed into bales ;

(*e*) " cotton waste " means droppings, strippings, fly and other waste products of a cotton mill or of a cotton ginning factory or of a cotton pressing factory, but does not include yarn waste ;

(*f*) " Indian Central Cotton Committee " means the Indian Central Cotton XIV of 1923. Committee constituted under the Indian Cotton Cess Act, 1923, and includes any sub-committee appointed by it to perform any function of the Indian Central Cotton Committee under this Act ; and

(*g*) " occupier " includes a managing agent or other person authorised to represent the occupier ;

(*h*) " prescribed " means prescribed by or under rules made under this Act.

Maintenance of registers.

3. (1) The owner of every cotton ginning factory shall cause to be maintained at the factory in such form, if any, as may be prescribed, a ginning register containing a record of all cotton ginned in the factory and of the names of the persons for whom and the dates on which the cotton has been ginned and of the amount ginned for each person.

(2) The owner of every cotton pressing factory shall cause to be maintained at the factory in such form, if any, as may be prescribed, a press register containing a daily record of the number of bales pressed in the factory, the serial number of each bale, and the name of the person for whom it has been pressed.

(3) The owner or the person in charge of a cotton ginning or cotton pressing factory shall be bound to produce any ginning register or press register maintained under this section when required to do so by any person appointed by the Local Government in this behalf, and the owner or person in charge of any cotton pressing factory shall be bound to furnish to the Indian Central Cotton Committee, if so required by it in writing, a copy, certified as correct by the owner or person in charge of the factory, of the entry in any press register maintained at the factory relating to any specified bale.

(4) No register required to be maintained by this section shall be destroyed until after the expiration of three years from the date of the last entry therein.

(5) If—

(*a*) in any factory any register required by this section to be maintained is not maintained or is maintained in any form other than the form, if any, prescribed for the purpose; or

(*b*) any entry in any such register is proved to be false in any material particular, or

(*c*) any such register is destroyed before the expiration of the period referred to in sub-section (4),

the owner of the factory shall be punished with fine which may extend to fifty rupees or, if he has previously been convicted of any offence under this sub-section, to five hundred rupees.

(6) If the owner or the person in charge of any factory fails to produce any register, or to furnish a certified copy of any entry, when required to do so under sub-section (3), or furnishes a certified copy of an entry knowing or having reason to believe such copy to be false, he shall be punished with fine which may extend to fifty rupees or, if he has previously been convicted of any offence under this sub-section, to five hundred rupees.

Marking of bales.

4. (1) The owner of every cotton pressing factory shall cause every bale pressed in the factory to be marked in such manner as may be prescribed, before it is removed from the press-house, with a serial number and with the mark prescribed for the factory.

(2) If any bale is removed from the press-house of any cotton pressing factory without having been marked as required by sub-section (1), the owner of the factory shall be punished with fine which may extend to fifty rupees.

Returns.

5. (1) The owner of every cotton pressing factory shall submit to the prescribed authority, within such time and in such form as may be prescribed, weekly returns showing the total number of bales of cotton pressed during the preceding week and from the commencement of the season to the end of that week, and the approximate average net weight of the bales pressed in that week.

(2) The Local Government shall compile from the weekly returns, and shall publish in such manner as the Governor-General in Council may direct, a statement showing the total number of bales pressed in the province during the week and from the commencement of the season to the end of the week, to which the returns relate :

Provided that the number of bales pressed in any individual factory shall not be published.

(3) If default is made in submitting any return as required by sub-section (1), the owner of the factory shall be punished with fine which may extend to fifty rupees.

(4) Where the owner of a cotton pressing factory has notified to the prescribed authority that the work of pressing bales in that factory has been suspended, it shall not be necessary for the owner to submit returns under sub-section (1) until such work has been resumed.

Explanation.—In this section "season" means the period notified in this behalf by the Local Government in the local official *Gazette*.

Scales and weights.

6. (1) No scales or weights shall be used in any cotton ginning or cotton pressing factory other than the scales or weights, if any, prescribed by the Local Government as standard for the district in which the factory is situated.

(2) If in any factory any scale or weight is used in contravention of the provisions of sub-section (1), the owner of the factory shall be punished with fine which may extend to fifty rupees, or if he has been previously convicted of any offence under this sub-section, to five hundred rupees.

Liability of lessee as owner.

7. (1) Where the owner of a cotton ginning or pressing factory has leased the factory for a period of not less than one month, in the case of a cotton ginning factory, or three months, in the case of a cotton pressing factory, and the lessor retains no interest in the management or profits of the factory and notice of the lease has been given by the lessor and the lessee to the prescribed authority, the lessee shall be deemed to be the owner of the factory, from the date of the notice and for the period of the continuance of the lease, for the purposes of Section 3, in respect of the registers maintained or to be maintained from that date and for that period, and for the purposes of Sections 4, 5 and 6.

(2) On the termination of the lease the lessee shall hand over to the lessor the registers maintained under Section 3, and the lessor shall forthwith report to the prescribed authority any default of the lessee in complying with the provisions of this sub-section or in maintaining the registers in accordance with the provisions of Section 3.

(3) If default is made in handing over any register or making any report as required by this section, the lessor or the lessee, as the case may be, shall be punished with fine which may extend to fifty rupees.

Liability on transfer of ownership.

8. (1) On a transfer of the ownership of a cotton ginning or pressing factory, the transferor shall hand over to the transferee the registers maintained under Section 3, and the transferee shall forthwith report to the prescribed authority any default of the transferor in complying with the provisions of this sub-section or in maintaining the registers in accordance with the provisions of Section 3.

(2) If default is made in handing over any register or making any report as required by sub-section (1), the transferor or the transferee, as the case may be, shall be punished with fine which may extend to fifty rupees.

Structural requirements for factories.

9. (1) In the case of cotton ginning factories the construction of which is commenced after the commencement of this Act :—

(*a*) gin-houses shall be provided with separate entrances and exits for the bringing in of unginned and the taking out of ginned cotton respectively, and

(*b*) the factories shall be constructed in accordance with plans and specifications approved by the prescribed authority :

Provided that nothing in this sub-section shall apply to any factory in which only roller gins are used where the number of such gins is not more than four.

(2) Within such period after the commencement of this Act as may be prescribed, the owner of every cotton pressing factory in which cotton is handled on the ground floor shall cause the press-house to be paved or provided with other suitable flooring to the satisfaction of the prescribed authority.

(3) If the owner of any factory fails to comply with any provision of this section which is applicable to the factory, he shall be punished with fine which may extend to one hundred rupees.

(4) (*a*) Where the owner of a factory has been convicted under sub-section (3), the prescribed authority may serve on the owner of the factory an order in writing directing that such alterations shall be made in the factory before a specified date, as in the opinion of the said authority are necessary to secure compliance with the provisions of sub-section (1) or sub-section (2), as the case may be.

(*b*) Where the alterations are not made in accordance with the order served under clause (*a*) of this sub-section, the prescribed authority may serve on the owner and on the occupier, if any, of the factory an order in writing directing that the work of ginning or pressing cotton in such factory shall be suspended until the alterations have been made in accordance with the order served under clause (*a*) of this sub-section and the owner and the occupier, if any, shall be jointly and severally liable to fine which may extend to fifty rupees for each day on which cotton is ginned or pressed in the factory in contravention of the order served under this clause.

Liability of officers of a company.

10. Where the person guilty of an offence under this Act is a company, every director, manager, secretary and other officer thereof who is knowingly a party to the default shall also be guilty of the like offence and liable to the like punishment.

Cognizance of offences.

11. (1) No prosecution under this Act shall be instituted except by or with the previous sanction of the District Magistrate or a Chief Presidency Magistrate or a Magistrate of the first class specially empowered in this behalf by the Local Government.

(2) No offence punishable under this Act shall be tried by any Court inferior to that of a Presidency Magistrate or of a Magistrate of the first class.

Power of the Governor-General in Council to make rules.

12. The Governor-General in Council may make rules to provide for :—

(*a*) the allotment of a special mark to be used by each pressing factory for the purpose of the marking of bales ;

(*b*) the manner in which bales shall be marked ; and

(*c*) the manner in which the weekly statements referred to in Section 5 shall be published.

Power of the Local Government to make rules.

13. The Local Government may, by notification in the local official *Gazette*, make rules consistent with this Act to provide for all or any of the following matters, namely :—

(*a*) the forms in which registers, records and returns are to be maintained or submitted, and the inspection of records and registers ;

(*b*) the appointment of the authority to whom and the time within which the returns required by Section 5 shall be made ;

(*c*) the weights and scales to be used in cotton ginning and cotton pressing factories in any district in the province, and the inspection of the same ;

(*d*) the appointment of authorities for the purposes of Sections 7, 8 and 9 ;

(*e*) the manner of service of orders made under Section 9 ;

(*f*) the powers of entry and inspection which may be exercised by District Magistrates or by any officer specially empowered in this behalf by the Local Government ;

(*g*) any other matter which is to be or may be prescribed or for which provision is necessary in order to carry out the purposes of this Act.

Power to reject unmarked bales in fulfilment of contracts.

14. After the expiration of one year from the commencement of this Act any person who has made a contract for the purchase of baled cotton may require that no bales other than bales marked in accordance with Section 4 shall be supplied in fulfilment of such contract, and, if he does so require, no bale not so marked shall be tenderable in fulfilment of the contract :

Provided that nothing in this section shall apply to a contract for the sale and delivery of cotton grown before, or less than one year after, the commencement of this Act.

Protection for acts done under Act.

15. No suit or other legal proceeding shall be instituted against any person in respect of anything which is in good faith done or intended to be done under this Act.

DEPARTMENT OF COMMERCE.

NOTIFICATION.

COMMERCE.

SIMLA, *the 8th August*, 1925.

No. 236-C. (2). In pursuance of sub-section (3) of Section 1 of the Cotton Ginning and Pressing Factories Act, 1925 (XII of 1925), the Governor-General in Council is pleased to appoint the 8th August, 1925, as the date on which the said Act shall come into force.

No. 236-C. (2). In exercise of the power conferred by Section 12 of the Cotton Ginning and Pressing Factories Act, 1925 (XII of 1925), the Governor-General in Council is pleased to make the following rules :—

Short title and commencement.

1. (1) These rules may be called the Indian Cotton Ginning and Pressing Factories Rules, 1925.

(2) They shall come into force on the eighth day of August, 1925.

2. In these rules—

Definition.

"Act" means the Cotton Ginning and Pressing Factories Act, 1925 ;

"Section" means a section of the Act.

3. The owner or lessee of every cotton pressing factory shall apply to the authority appointed to receive returns under sub-section (1) of Section 5 for the allotment of the mark required by Section 4 to be used for such factory. Such application shall be made, in the case of factories in existence at the commencement of these rules, on or before the 1st September, 1925, and in case of factories constructed thereafter, not less than one month before work commences in the factory :

Provided that the authority aforesaid may at any time allot the mark to be used in a factory in respect of which no application has been made and may intimate the allotment to the owner of such factory.

Special mark.

4. (1) The special mark allotted to each factory shall consist of a letter denoting the province in which the factory is situated together with a number denoting the factory.

(2) The letters denoting the province shall be as follows :—

For presses situated in the Madras Presidency the letter	M.
For presses situated in the Bombay Presidency, excluding Sind, the letter	B.
For presses situated in Sind the letter	S
For presses situated in Bengal the letter	L.
For presses situated in the United Provinces the letter	U.
For presses situated in the Punjab the letter	P.
For presses situated in the Central Provinces the letter	Q.
For presses situated in Bihar and Orissa the letter	C.
For presses situated in Assam the letter	A.

For presses situated in the North-West Frontier Province the letter .. F.

For presses situated in Ajmer-Merwara the letter .. .. .. J.

For presses situated in Delhi the letter .. .. D.

(3) The numbers denoting the factory shall run consecutively within each province.

Marks not transferable.

5. No special mark once allotted shall be transferred to another factory :

Provided that when a press is transferred from one province to another the original allotted mark shall no longer be used and application shall be made to the prescribed authority for the allotment of a fresh mark.

Serial number.

6. The serial number shall consist of two parts. The first part shall consist of two numerals being the last two integers of the calendar year in which the cotton year has commenced and the second part shall be the running number of the bale according to the press factory register. A new series of running numbers shall be started at the commencement of each cotton year. The cotton year shall commence on the 1st day of September in each calendar year and shall terminate on the thirty-first day of August next following, except in the Madras Presidency where the dates for the commencement and ending of the cotton year shall be the first day of February and the 31st day of January respectively.

7. On and after the 1st October, 1925, every bale of cotton pressed in a cotton pressing factory shall be marked in the following manner :—

Manner of marking.

The special mark and the two integers denoting the cotton year shall be indelibly punched or stamped on any part of the central hoop of the bale in such a manner as to be clearly decipherable. Provided that if the bale is lashed with less than three hoops the marks shall be punched on either of the hoops (if two hoops be used) or near the middle of the hoop if one hoop only be used. The letters and numbers used shall in no case be less than one-quarter-of-an-inch in length ; English letters and numbers only shall be used.

The running number of the bale shall be punched or stamped on the hoop as described above *or* shall be stencilled in ink on the hessian covering of a lashed flat side of the bale in such a manner as to be clearly decipherable, English numbers only being used which shall not be less than two inches in length.

The following order shall be observed for marks punched on the hoops :—

Number denoting factory—letter denoting province—numerals denoting cotton year.

If the running number be punched on the hoop it shall follow the second of the two numbers denoting the cotton year and separated from it by a star. Where the running number is stencilled on the hessian a star shall be placed before the first integer and after the last integer.

Illustration.

A bale of cotton pressed at a factory in the Bombay Presidency in February 1926 would be marked in either of the following ways :—

On the hoop.		On the hoop.	On the hessian.
1		1	*
6		6	3
1		1	4
B	or	B	5
2		2	6
5		5	*
*			
3			
4			
5			
6			

In this mark 161B is the factory mark, B denoting the province and 161 the number allotted to the factory ; 25*3456 is the serial number, 25 denoting the cotton year commencing on September 1st, 1925, and 3456 the running number of the bale pressed in the factory.

Note.

(*i*) In order to reduce to the minimum any risk of weakening the hoops by the punching or stamping of marks it is advisable to place the numbers and letters as in diagram (*a*) and not as in diagram (*b*).

Diagram (*a*)

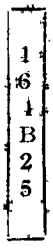
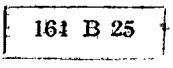


Diagram (*b*)



(*ii*) The stencilling of the running number on an end or unlashed side of a bale does not fulfil the requirements of this rule.

Compilation and publication of returns.

8. The statements to be compiled by Local Governments under sub-section (2) of Section 5 shall be published weekly in the local official *Gazette* and in the supplement to the *Gazette of India* in the form appointed for the province concerned in the annexed Schedule.

SCHEDULE.

FORM A.—MADRAS.

Statement of cotton pressed in the Madras Presidency for the week ending.....19 .

[Section 5 (2) of the Cotton Ginning and Pressing Factories Act, 1925.]

1	2	3	4	5
Variety of cotton.	No. of bales pressed.		No. of bales pressed.	
	During the week.	During the corresponding week last year.	Since.....19 . (The date prescribed by the Local Government as the commencement of the season.)	During the corresponding period last year.
1. Tinnevellies				
2. Salems				
3. Cambodia..				
4. Northerns and Westerns ..				
5. Coconadas				
Total. ..				

(Columns 3 and 5 to be filled in after September 1st, 1926.)

FORM B.—BOMBAY.

Statement of cotton pressed in the Bombay Presidency for the week ending 19

[Section 5 (2) of the Cotton Ginning and Pressing Factories Act, 1925.]

1	2	3	4	5	6
	No. of bales pressed.		No. of bales pressed.		
Name of Division or Block.	During the week.	During the corresponding week last year.	Since.....19 . (The date prescribed by the Local Government as the commencement of the season.)	During the corresponding period last year.	Districts included in the block.
1. The Konkan and the Port of Bombay.					Thana, Kolaba and the Island of Bombay.
2. Gujerat					Ahmedabad, Kaira, Broach, Panch Mahals and Surat.
3. North Deccan ..					East Khandesh, West Khandesh and Nasik.
4. East Deccan ..					Ahmednagar, Sholapur and Bijapur.
5. West Deccan and Southern Mahratta Country					Poona, Satara and Ratnagiri. / Belgaum, Dharwar, Kanara.
6. Sind					All districts in Sind.
Total for the Presidency excluding the Konkan and Port ..					NOTE.—Cotton pressed in the Konkan and Port block is mainly re-pressed cotton or cotton waste.

(Columns 3 and 5 to be filled in after September 1st, 1926.)

FORM C.—BENGAL.

Statement of cotton pressed in the Bengal Presidency for the week ending.....19 .

[Section 5 (2) of the Cotton Ginning and Pressing Factories Act, 1925.]

1	2	3	4	5	6
	No. of bales pressed.		No. of bales pressed.		
Name of Division or Block.	During the week.	During the corresponding week last year.	Since.....19 . (The date prescribed by the Local Government as the commencement of the season.)	During the corresponding period last year.	Districts included in the block.
The Bengal Presidency.					All districts in the Presidency.

(Columns 3 and 5 to be filled in after September 1st, 1926.

FORM D.—UNITED PROVINCES.

Statement of cotton pressed in the United Provinces of Agra and Oudh for the week ending ... 19

[Section 5 (2) of the Cotton Ginning and Pressing Factories Act, 1925.]

1	2	3	4	5	6
	No. of bales pressed.		No. of bales pressed.		
Name of Division or Block.	During the week.	During the corresponding week last year.	Since. ..19 . (The date prescribed by the Local Government as the commencement of the season.)	During the corresponding period last year.	Districts included in the block.
1. Upper Doab ..					Dehra Dun, Saharanpur, Meerut, Bulandshahr, Aligarh, Muzaffarnagar.
2. Middle Doab ..					Muttra, Farukhabad, Etah, Agra, Mainpuri, Etawah.
3. Lower Doab and Bundelkhand ..					Cawnpore, Fatehpur, Allahabad, Jhansi, Jalaun, Hamirpur, Banda.
4. Rohilkhand ..					Hardoi, Shahjahanpur, Bareilly, Moradabad, Budaun, Bijnor, Pilibhit, Naini Tal, Almora, Garhwal.
5. Rest of the Province.					Mirzapur, Benares, Jaunpur, Ghazipur, Azamgarh, Ballia, Gorakhpur, Basti, Gonda, Bahraich, Kheri, Sitapur, Unao, Lucknow, Bara Banki, Rai Bareli, Sultanpur, Fyzabad, Partabgarh.
TOTAL ..					

(Columns 3 and 5 to be filled in after September 1st, 1926.)

FORM E.—PUNJAB.

Statement of cotton pressed in the Punjab for the week ending.....19

[Section 5 (2) of the Cotton Ginning and Pressing Factories Act, 1925.]

1	2	3	4	5	6
	No. of bales pressed.		No. of bales pressed.		
Name of Division or Block.	During the week.	During the corresponding week last year.	Since.....19 (The date prescribed by the Local Government as the commencement of the season.)	During the corresponding period last year.	Districts included in the block.
1. Ambala					Hissar, Rohtak, Gurgaon, Karnal, Ambala.
2. Jullunder					Kangra, Hoshiarpur, Jullunder, Ludhiana.
3. Lahore					Lahore, Amritsar, Gurdaspur, Sialkot, Gujranwala, Sheikupura.
4. Rawalpindi ..					Gujrat, Shahpur, Jhelum, Rawalpindi, Attock.
5. Multan					Montgomery, Lyallpur, Jhang, Multan, Muzzafargarh, Dera Ghazi Khan.
6. Ferozepore					Simla, Ferozepore, Mianwali.
TOTAL ..					

(Columns 3 and 5 to be filled in after September 1st, 1926).

FORM F.—CENTRAL PROVINCES.

Statement of cotton pressed in the Central Provinces for the week ending 19

[Section 5 (2) of the Cotton Ginning and Pressing Factories Act, 1925.]

1	2	3	4	5	6
	No. of bales pressed.		No. of bales pressed.		
Name of Division or Block.	During the week.	During the corresponding week last year.	Since.....19 . (The date prescribed by the Local Government as the commencement of the season.)	During the corresponding period last year.	Districts included in the block.
1. Jubbulpore					Jubbulpore, Saugor, Damoh.
2. Nerbudda					Narsinghpur, Hoshangabad.
3. Nimar					Nimar.
4. Nagpur					Nagpur, Chanda, Bhandara, Wardha, Balaghat.
5. Satpura					Seoni, Chindwara, Betul, Mandla.
6. Chhatisgarh.. ..					Drug, Raipur, Bilaspur.
TOTAL ..					

(Columns 3 and 5 to be filled in after September 1st, 1926.)

FORM G.—BIHAR AND ORISSA.

*Statement of cotton pressed in the Province of Bihar and Orissa during the week ending*____ 19

[Section 5 (2) of the Cotton Ginning and Pressing Factories Act, 1925.]

1	2	3	4	5	6
	No. of bales pressed.		No. of bales pressed.		
Name of Division or Block.	During the week.	During the corresponding week last year.	Since. ....19 . (The date prescribed by the Local Government as the commencement of the season.)	During the corresponding period last year.	Districts included in the block.
The Province of Bihar and Orissa.					All districts in the Province.

(Columns 3 and 5 to be filled in after September 1st, 1926.)

FORM H.—ASSAM.

Statement of cotton pressed in the Province of Assam during the week ending ..... 19 .

[Section 5 (2) of the Cotton Ginning and Pressing Factories Act, 1925.]

1	2	3	4	5	
	No. of bales pressed.		No. of bales pressed.		
Name of Division or Block.	During the week.	During the corresponding week last year.	Since.....19 . (The date prescribed by the Local Government as the commencement of the season.)	During the corresponding period last year.	Districts included in the block.
The Province of Assam..					All districts in Assam.

(Columns 3 and 5 to be filled in after September 1st, 1926.)

FORM I.—NORTH-WEST FRONTIER PROVINCE.

Statement of cotton pressed in the North-West Frontier Province during the week ending.....19 .

[Section 5 (2) of the Cotton Ginning and Pressing Factories Act, 1925.]

1	2	3	4	5	6
	No. of bales pressed.		No. of bales pressed.		
Name of Division or Block.	During the week.	During the corresponding week last year.	Since.....19 . (The date prescribed by the Local Government as the commencement of the season.)	During the corresponding period last year.	Districts included in the block:
The North-West Frontier Province.					All districts in the Province.

(Columns 3 and 5 to be filled in after September 1st, 1926.)

FORM J.—AJMER-MERWARA

Statement of cotton pressed in the Ajmer-Merwara during the week ending.....19

[Section 5 (2) of the Cotton Ginning and Pressing Factories Act, 1925.]

	2	3	4	5	6
	No. of bales pressed.		No. of bales pressed.		
Name of Division or Block.	During the week.	During the corresponding week last year.	Since.....19 (The date prescribed by the Local Government as the commencement of the season.)	During the corresponding period last year.	Districts included in the block.
Ajmer-Merwara ..					The whole of Ajmer-Merwara.

(Columns 3 and 5 to be filled in after September 1st, 1926.)

FORM K.—DELHI.

Statement of cotton pressed in Delhi for the week ending..... 19

[Section 5 (2) of the Cotton Ginning and Pressing Factories Act, 1925.]

1	2	3	4	5	6
	No. of bales pressed.		No. of bales pressed.		
Name of Division or Block.	During the week.	During the corresponding week last year.	Since.....19 : (The date prescribed by the Local Government as the commencement of the season.)	During the corresponding period last year.	Districts included in the block.
The Delhi Province ..					The whole of Delhi Province.

(Columns 3 and 5 to be filled in after September 1st, 1926.)

APPENDIX IV.

THE BILL FOR THE REGULATION OF GINS AND PRESSES.

WHY IT IS WANTED.

WHAT IT REQUIRES THE PRESS OWNER TO DO.

HOW IT WILL HELP THE CULTIVATOR.

This Bill is frankly an attempt to prevent, or at any rate reduce the adulteration of good cotton by bad and is a necessary complement to the Cotton Transport Act passed in 1923. The evils of mixing are well recognised and for years a remedy has been sought. The justification for legislation is that grave economic loss to the whole country is being caused and that the loss is falling most heavily on the cotton grower who is least able to protect himself. It must be remembered that the Indian cotton crop now averages some 50 lakhs of bales (worth over 100 crores of rupees) of which Indian mills take about 20 lakhs of bales, the balance being exported. A few recent instances will show the extent of the loss caused by mixing.

The Agricultural Department in the Punjab has successfully established the growing of Punjab-American cotton on some six lakhs of acres. Last year it was calculated that this brought in *at least* 120 lakhs of rupees of extra profit to the grower. But Indian mills have constantly complained that the cotton is mixed and consequently cannot be used for the purpose for which cotton of one inch staple should be suitable.

At the commencement of the season the demand for cotton of the 1923-24 crop was keen and both Indian mills and exporters paid high prices for it. Later deliveries were badly mixed, the reputation of Punjab-American was lowered and its price relative to other cottons fell heavily as will be seen from the following Bombay prices :—

Date.	Spot prices of Punjab-American. Rs. per khandy		Broach Quotation. Rs. per khandy	Premium on Broach. Rs. per khandy
	High.	Low.		
February 11th	755	735	665—635	Rs. 90 to Rs. 100.
March 1st	670	650	585—580	Rs. 85 to Rs. 70.
April 7th	680	660	605—585	Rs. 75.
May 5th	670	650	600—580	Rs. 70.
June 9th	685	650	625—610	Rs. 60 to Rs. 40.
July 7th	650	615	585—575	Rs. 65 to Rs. 40.
August 4th	640	620	595—585	Rs. 45 to Rs. 35.
September 16th	620	600	585—565	Rs. 35.
October 13th	565	540	540—520	Rs. 25 to Rs. 20.
November 1st	530	510	510—500	Rs. 20 to Rs. 10.

A similar fall took place on the Liverpool market where a fair amount of Punjab-American was sold in the early part of 1924. Early in 1924 Punjab-American was sold at ¼*d.* per lb. *above* current quotations for Middling American. Later, as the result of complaints of mixed cotton being delivered, prices even for the best fell to 1½*d.* per lb. *below* Middling American ; a fall in price equal to Rs. 80 per Bombay khandy.

When these figures are translated into terms of unginned cotton they represent Rs. 2-8 per maund or, say, Rs. 17-8 per acre. The effect on the cultivator's profit is obvious.

Mixing Not Done by the Grower.

Very careful and thorough enquiry has been made as to where the mixing takes place and a number of independent reports received. Despite the fact that the same cultivators grow both American and Desi cottons in the Punjab, the American *kapas* brought to market by them is on an average of 95 per cent. or greater purity. The baled cotton which is exported from the Punjab is often only 75 per cent. pure. The mixing is done *after* the cultivator has sold his cotton and mainly in the ginning and pressing factories.

Other outstanding instances which can be quoted are the mixing of inferior cottons with Cambodia at Tiruppur and of short-staple cotton with the best Madras Northerns at Nandyal.

What the Factory Owner is Asked to Do.

If the Bill becomes law every owner of a pressing factory will have to—

(1) have all bales marked in a prescribed manner ;

(2) have records maintained of all bales pressed and for whom pressed

(3) every gin owner will be required to maintain a record of all cotton ginned and for whom ginned. Both will be required to produce copies of their records if called upon to do so by the Local Government or the Indian Central Cotton Committee.

The additional requirements are :—

(1) That all pressing factories shall submit periodical returns of the number of bales pressed.

(2) In ginning and pressing factories only recognised weights shall be used.

(3) *New* factories shall comply with certain structural requirements.

Most good factory owners and merchants, whose work is properly organised, comply with most of these requirements already.

(1) The marking of bales with a mark identifying the press means no hardship. Most presses put on their own mark already. A uniform system of permanent marking, however, is needed. The present marks on the *ends* of bales are often useless.

(2) Most presses already maintain records of all cotton pressed specially when they press for more than one client.

(3) Periodical (weekly) statistical returns are at present supplied voluntarily by all presses in Madras. A voluntary system was tried in other provinces, and no objections were raised, but the returns were too incomplete to be of value. All spinning mills are required by law to make a return every month of the quantity of yarn produced, and there is no reason why cotton presses should not furnish returns of cotton baled which are essential to the proper maintenance of cotton statistics.

Recognised Weights.

Here again the majority of ginning factories do this already. In many cotton markets the actual weighment is done in the ginning factories and the cultivator is clearly entitled to honest weighment.

Structural Requirements for New Factories.

A large number of ginning factories are well designed and well constructed. Others are so faulty that the cotton ginned in them is seriously damaged. The provision that all future factories shall confirm to a reasonable minimum standard is not only no hardship but to everybody's interest.

It is clear that there is nothing that the honest press owner need fear in these conditions.

Why the Factory Owner Should be Held Responsible.

There are many that admit that undesirable practices are going on but argue that the factory owner only works on commission and is in the hands of his clients. This is only partly true, for it is well known that—

(1) in some districts where certain abuses are very prevalent the factory owners themselves are big buyers of *kapas* and sellers of cotton.

(2) Factory managers know quite well when malpractices are going on. In many presses there are special rates for pressing mixed cotton.

(3) Some pressing factories have actually installed machines to facilitate mixing.

Moreover, the record of ownership of the cotton enables the press owner at once to pass on the responsibility to the merchant for whom he presses if he has himself worked in good faith.

How the Proposed Act Would Help the Grower.

The introduction of a system of marking of bales and maintenance of records will put the merchant or spinner in a position to protect himself. This will lead to greater confidence in buying and thus to higher prices to the grower. We have an excellent example of how the cultivator has benefited by the stopping of abuse in the application of the Cotton Transport Act in Bombay. It is well known that the quality of Surat, Kumpta and Dharwar cottons has gone up enormously since the importation of short-staple cotton by rail and sea for mixing purposes was stopped. The prices for the cotton and *kapas* of these areas relative to other cottons rose considerably and the cultivator gained.

It has already been stated that this Bill is a necessary complement to the Cotton Transport Act, and the reasons are obvious. In the first place, the Bill now proposed is made general in its application for there are many abuses prevalent in ginning and pressing factories with which the Cotton Transport Act does not deal. Secondly, the Cotton Transport Act can only be fully successful where well-defined areas with good natural boundaries can be chosen within which only one variety of cotton is grown.

There are many areas in India where, owing to limited irrigation facilities or other agricultural reasons more than one type of cotton are grown in the same tract. Again, complete control of the transport of cotton by road is only a practical proposition where the tracts growing different varieties have definite natural boundaries which unfortunately is not always the case.

Under these circumstances, the only practical remedy appears to be to render malpractices at ginning and pressing factories difficult and unprofitable.

The cotton trade, on the whole, appears to be fairly well organised: the cotton growers are mostly small men and not yet organised. Consequently there is ample justification for legislative action to prevent short-sighted middlemen from following a policy likely to cause lasting injury to the cultivators by spoiling the good name and lowering the reputation of the cottons which are actually grown.

APPENDIX V.

AREAS UNDER NEW AND IMPROVED VARIETIES OF COTTON.

The information given below has been collected from the Agricultural Departments as to the available supply of those new cottons which are now grown on a considerable scale. It has been represented to the Committee that the cotton trade have insufficient information as to where and in what quantities these cottons are available. It is hoped that the details now given will be of use to buyers of these cottons.

I. BOMBAY.

Surat 1027.—The Agricultural Department supervises 9,000 acres of seed farms the produce of which approximates to 2,500 bales which is guaranteed as true to type and which is marketed at a definite place by arrangement with the growers ; full details of these sales can be obtained from the Deputy Director of Agriculture. This represents the first quality produce. The seed issued by the Department is sufficient for 1¼ to 1½ lakhs of acres producing 40,000 to 50,000 bales in a normal year. This cotton is marketed mainly at Surat and Navsari, but the above figure includes the cotton grown in Rajpipla State (which has already established a name in the market) and in parts of the Baroda State. In addition a very large section of the portion of the Surat District and the Baroda State south of the Tapti now grows practically pure 1027 cotton. In brief, 2,500 bales of absolutely genuine cotton is produced by seed farms and marketed under special arrangement by the Agricultural Department, 40,000 to 50,000 bales are produced in a normal year from certified seed most of which comes into two well-known markets.

Improved Kumpta—Dharwar No. 1.—The seed farm area is 7,000 acres producing approximately 1,500 bales in a normal season. Seed of known origin is sown on an area of about one lakh of acres producing 25,000 bales, 80 per cent. of which arrives at the Hubli market and 30 per cent. of which, in addition to 1,500 bales of seed-farm cotton, is marketed by the Hubli Co-operative Cotton Sale Society. Of the cotton marketed by the Society a further 3,000 bales are considered to be practically as pure as that from the seed farms.

Improved Dharwar-American—Gadag No. 1 (*Upland*).—The seed farm area is 6,000 acres producing about 1,000 fully-pressed bales which is sold through the Gadag Co-operative Cotton Sale Society. The produce from certified seed is estimated at 20,000 bales most of which comes to the Gadag market, some 5,000 bales coming to the Cotton Sale Society of which one-half is considered to be equal to seed-farm produce. The Deputy Director of Agriculture invites attention to a new difficulty which has arisen, namely, that after the sales kapas of improved strains is mixed with ordinary bazaar kapas before ginning and before despatch to Bombay, a practice which the Department is very anxious to discourage.

II. MADRAS.

Improved Northerns—Nandyal 14.—The actual seed-farm area is 800 acres in the current year, the area sown with seed supplied by the Department being 9,000 acres producing 1,300 bales, and the area sown with seed supplied by ryots to each

other being 11,000 acres producing 1,500 bales. The total supply of this variety, therefore, is approximately 3,000 bales half of which is known to be pure. The seed-farm cotton is sold by the Agricultural Department by public auction on behalf of the ryots. This variety is mainly marketed in the Nandyal and Tadpatri markets.

Improved Westerns—Hagari 25.—The seed-farm area is 1,200 acres producing 170 bales, the area sown from departmental seed being 9,000 acres producing 1,300 bales and the area sown with ryots' seed 170,000 acres producing 24,000 bales. The total supply of this variety, therefore, is some 25,000 bales mainly marketed at Adoni, Guntakal and Bellary.

Cambodia 295 (*now known as Coimbatore No.* 1).—This new selection has been distributed to cultivators for the first time during the past year the area being 1,000 acres and the estimated produce 600 bales. The whole of this is grown near Avanashi, the market being Tiruppur. (*Note.*—The total Cambodia crop for the current year is estimated at 369,500 acres and 165,600 bales.)

Karunganni.—The selected " Company " type of Karunganni cotton is grown in two agricultural circles, the area under seed farms being 300 acres producing 100 bales, the area under departmental seed 23,000 acres producing 6,600 bales, the area under ryots' seed 116,000 acres producing 33,500 bales. These figures refer only to the selected Company type of Karunganni. As is well known, this is a recent selection, and ordinary Karunganni now covers practically half of the Tinnevelly area. The selected type referred to is mainly sold at the Virudhunagar and Sattur markets.

III. Punjab.

Punjab-American.—The total area under Punjab-American cotton this year is reported to be 993,000 acres; the bulk of this is 4F, the markets for which are well known. As regards the two later varieties, 285F and 289F, departmental seed of 285F was issued for 5,476 acres in the Lyallpur Circle of which there are 2,358 acres on the various large estates. The known production of 285F, therefore, amounts to some 2,500 bales ; this is much below previous years. The fall in the production of this variety is attributed to inadequate prices (as compared to 4F) in 1924-25.

289F.—Departmental seed for this was issued for over 2,000 acres and in addition some 5,000 acres of this variety have been grown on large estates. The prospective supply of the 289F variety therefore is much the same as that of 285F. For both varieties the principal markets are those of the Lower Bari Doab Canal Colony, *viz.*, Khanewal, Okara and Montgomery.

APPENDIX VI.

LIVERPOOL COTTON ASSOCIATION, LIMITED.

Contract Form 12*a*.

EMPIRE AND MISCELLANEOUS COTTON DELIVERY CONTRACT NOTE.

Based on Universal Standards for American Cotton.

(Adopted

LIVERPOOL,.....192 .

Messrs.....

Dear Sirs,

We have this day.....$\frac{\text{to}}{\text{from}}$ you, to be delivered ex warehouse in Liverpool during.....,24000 lbs. COTTON net weight to be contained in 50 BALES, more or less, at least equal in value to the Universal Standard for STRICT LOW MIDDLING AMERICAN COTTON but not below the grade of that Standard and of not less than fair staple, or, if tinged or stained, of any grade which (*irrespective of allowance to seller for staple*) is at least equal in value to the said STRICT LOW MIDDLING Standard (*equal in colour to the Standard and of not less than fair staple*)at the price of.....pence per lb. for MIDDLING American cotton (Universal Standard), (*equal in colour to the Standard and of not less than fair staple*) with additions or deductions for such other qualities as are within the contract according to their value as compared with the spot value of MIDDLING (*equal in colour to the Standard and not less than fair staple*) on the day the cotton is tendered.

Cotton grown in any country the quality of which is within the terms of this contract, may be tendered on this contract with the exception of certain growths of Egyptian and Sudan cotton which are specified below.

There shall not be more than one tender nor more than two lots for each 24,000 lbs. and each 24,000 lbs. shall be treated as a separate contract.

Each tender on this contract must be cotton grown in the same country.

The additions or deductions for quality shall be settled by arbitration, but any lot or any bales not in accordance with the contract may be returned to the seller under the provisions of the Rules.

In the event of cotton of staple better than 1$\frac{3}{16}$ths inch being tendered, the seller shall not be entitled to any allowance in excess of the spot value of 1$\frac{3}{16}$ths inch American cotton of the equivalent grade of the cotton tendered.

The contract, of which this is a note, is made between ourselves and yourselves, and not by or with any person, whether disclosed or not, on whose instructions or for whose benefit the same may have been entered into.

This contract is on " Settlement Terms," and is therefore subject to weekly payments as provided for in the Rules.

This contract is subject to the Rules of the LIVERPOOL COTTON ASSOCIATION, Limited, in force at the date of this contract which provide (amongst other things) for the settlement of differences by arbitration, and in case of any difference the matter shall be settled in accordance with the Rules.

This contract shall not be cancelled on any ground.

The contract, of which the above is a note, was made on the date specified, within the business hours fixed in the Rules.

Yours faithfully,

.....

The growths of cotton that are excluded from being tendered on this contract are :—

1. Sakellaridis and/or similar varieties in growth and staple grown in Egypt or Sudan of the grade of Good Fair Sakellaridis and upwards.

   Upper, Brown and/or similar varieties of cotton grown in Egypt of the grade of Good Fair and upwards.

APPENDIX VII.

SPINNING TESTS ON INDIAN COTTONS.

(From Vol. II, No. 2 of the "Empire Cotton Growing Review.")

The following tests on (bale) samples of Indian cottons sent by the Indian Cotton Committee have been carried out with the co-operation of the Oldham Master Cotton Spinners' Association.

Samples of the raw cotton, and of the product after it has passed through the various processes, can be seen at the offices of the British Cotton Growing Association, 333-350, Royal Exchange, Manchester.

Standards are given in heavy type.

Spinning tests of Indian Cotton.

FEBRUARY, 1925.

Firm Making Test.	Growth.	Bale No.	Per Cent Loss up to Card Sliver, including Invisible Loss.	Nominal Counts.	Actual Counts at Spindle Point.	Lea Strength Test in Lbs.	Actual Turns per Inch.	Estimated Value Compared with Price of Current Month Futures (Universal Standard.)
No. 1	**American** ..		8.5	**Weft 30**	**31.18**	**39**	**21**	**50 pts. on**
				Weft 28	**29.00**	**45.06**	**19.87**	
				Twist 34	**34.27**	**41**	**30.4**	
	1027 ALF (Surat) ..	6	10.87	Weft 28	30.20	46.125	19.75	Grade—Pass 30 pts. on Staple + 30
				Twist 34	37.30	37.6	30.4	
	Dharwar No. 1	5	11.25	Weft 30	30.96	47.625	21	Grade—5 45 pts. on Staple + 50
				Twist 34	35.83	43.75	30.4	
	Cambodia ..	2	10.75	Weft 28	29.82	48	20	Grade—Pass 40 pts. on Staple + 40
				Twist 34	36.89	41	30.4	
No. 2	**Texas American**		7.12	**Twist 30**	**33.03**	**48.87**	**20.9**	**75 pts. on**
				,, 36	**36.62**	**42.62**	**22.5**	
				Weft 24	**25.75**	**51.75**	**15.78**	
				,, 28	**28.18**	**55.75**	**17.18**	
	285 F (Punjab-Am)	21	14.36	Twist 30	29.9	59.25	20.9	Grade—80 60 pts. off Staple + 20
				,, 36	33.43	50	22.5	
				Weft 24	23	53.25	15.78	
				,, 28	25.56	52.75	17.18	
	289 F. (Punjab-Am.).	22	18.23	Twist 30	28.71	68.62	20.9	Grade —150 125 pts. off Staple + 25
				,, 36	32.56	55.37	22.5	
				Weft 24	21.81	71.50	15.78	
				,, 28	24.06	57.25	17.18	
	Cambodia ..	3	10.09	Twist 30	29.34	54.5	20.9	Grade + 15 25 pts. on Staple + 10
				,, 36	33.06	45.5	22.5	
				Weft 24	23.75	58.5	15.78	
				,, 28	25.50	59.5	17.18	

Firm Making Test:	Growth.	Bale No.	Per Cent. Loss up to Card Sliver.	Nominal Counts.	Actual Counts at Spindle Point.	Lea Strength Test in Lbs.	Actual Turns per Inch.	Estimated Value Compared with Price of Current Month Futures (Universal Standard).
No. 3	**Middling American.**		9.63	**Twist 19**	**20.14**	**77.12**	**15.95**	15 pts. on
				„ 12	**12.86**	**137.25**	**12.55**	
				Weft 20	**21.42**	**62.25**	**14.50**	
				„ 14	**14.77**	**108.12**	**11.40**	
	Karunganni ..	8	10.6875	Twist 16	17.80	78.50	15.15	Grade—25 200 pts. off Staple—175
				„ 10	11.54	132.75	12.10	
				Weft 22	24.05	43.37	15.85	
				„ 10	11.47	59.62	9.25	
	1027 ALF (Surat).	7	10.125	Twist 16	16.92	101.00	14.60	Grade—25 Pass Staple + 25
				„ 12	12.86	138.75	11.80	
				Weft 15	16.67	100.12	12.70	
				„ 14	15.21	108.25	11.35	
	Sircar 14 ..	1	15.875	Twist 16	16.73	114.62	14.80	Grade—125 100 pts. off Staple + 25
				„ 10	10.68	204.25	11.30	
				Weft 20	21.39	82.00	14.55	
				„ 14	15.10	121.12	11.60	
	Sircar 25 ..	R1	10.50	Twist 20	23.00	58.37	16.45	Grade—40 50 pts. off Staple—10
				„ 16	17.65	84.87	15.05	
				Weft 18	20.58	62.75	13.05	
				„ 16	17.99	76.25	13.35	
No. 4	**Boweds American.**		**10.2**	**Weft 24**	**23.57**	**45.27**	**15.91**	**25 pts. on**
				„ 20	**21.07**	**51.37**	**14.5**	
	Karunganni ..	9	11.3	Weft 24	23.88	33.75	15.91	Grade—Pass 150 pts. off Staple—150
				„ 20	20.93	42.25	14.5	
	Sircar 14 ..	R 2	10.88	Weft 24	23.66	60.70	15.91	Grade—75 100 pts. off Staple—25
				„ 20	20·81	69.12	14.5	
	Gadag No. 1 ..	4	16.75	Weft 24	22.28	68	15.92	Grade—130 75 pts. off Staple + 55
				„ 20	20.53	74	14.53	

SPINNERS' COMMENTS.—NO. 1 FIRM.

	On the Raw Cotton.					On Behaviour in Working.	On the Yarns Produced.
	Staple (Ins.)	Seed and Leaf.	Colour.	Ginning.	Generally.		
1027 ALF (Surat).	1 1/16	Comparatively free.	Good white to cream	Good.	Very desirable cotton, but attention should be given to developing staple.	Worked fairly well.	This sample is very little inferior to this season's Strict Middling American and slightly brighter in appearance.
Dharwar No. 1.	1 3/32	Comparatively free.	Cream.	Good.	The colour will prejudice general use, and whiter strain should be cultivated.	Worked well.	Equal to Strict Middling Boweds in every respect except colour.
Cambodia ..	1 3/32	Comparatively free.	Creamy.	Good.	The cotton is of a nice silky variety, but value would be increased if colour could be made more like American.	Worked well.	Very little to choose for even thread or cleanliness. The sample is a very desirable cotton in every respect except colour.

SPINNERS' COMMENTS.—NO. 2 FIRM.

	On the Raw Cotton.					On Behaviour in Working.	On the Yarns Produced.
	Staple (Ins.)	Seed and Leaf.	Colour.	Ginning.	Generally.		
285F (Punjab Am.)	1 1/16	Too much of both. Also crushed seed with oil stains.	White.	Not good.	This cotton is strong, less neppy than 289F. but lossy.	Did not spin well (uneven and neppy).	This 285 F is in many respects like 289 F, but is better ginned and does not contain so much trash. It is brighter and a better colour than 289 F, but inferior generally, although slightly longer in staple. Stronger in pull than American Texas after allowing for coarse counts. For weft it will spin higher counts than those tested, but it needs to be better ginned and grown from a seed which will give a more even running staple.
Cambodia ..	1 1/32	Satisfactory.	Cream.	Satisfactory.	This type is nearest to the American-grown cotton.	Spun and looks more like American than others tested.	This type (Cambodia) spun well. It is much like the Texas against which it was tested. It is the nearest in value to American, and could be used extensively if grown in quantity and kept equal to this bale. Comparing the counts and strength per lea with the American, there was little in them, but 30s T is quite far enough to make a really satisfactory twist yarn. It will spin 32s weft with a low draft.

SPINNERS' COMMENTS.—No. 2 FIRM—*contd.*

	On the Raw Cotton:					On Behaviour in Working.	On the Yarns Produced.
	Staple (Ins.)	Seed and Leaf.	Colour.	Ginning.	Generally.		
289F (Punjab Am.)	1 1/16	Bad.	Dull white or grey.	Poor.	The waste loss is very heavy. The cotton is strong and free from excessive moisture. Bad for neps.	This type is very neppy and spun the worst of the types sampled.	Spinners on all counts were unanimous that this type was the worst spinning cotton. Whilst it was longer in staple than other types, its hard character made it the worst spinning cotton even with standard turns in. Its worst features are its neppy character, unevenness, and great waste loss: Taking 13½*d.* as the value of the F. M. Texas American Cotton it was tested against, it would require to be 2*d.* per pound cheaper in price for waste loss alone, to say nothing of the inferior yarn it produced in other respects.

SPINNERS' COMMENTS.—No. 3 FIRM.

	On the Raw Cotton.					On Behaviour in Working.	On the Yarns Produced.
	Staple (Ins.)	Seed and Leaf	Colour.	Ginning.	Generally.		
Karunganni.	15/16	Clean.	Good and bright, slightly creamy.	Fairly well ginned.	This cotton is of a very soft nature with very low natural twist. Requires highly twisting to get anything approaching strength of (Universal) Middling American cotton. Suitable only if used alone for very soft yarns about 20s. Worth cultivating for mixing with American.	Worked badly with normal conditions; improved with extra twist.	Suitable only if used alone up to 20s in soft spun yarns. A nice even yarn; in appearance equal to one spun with American cotton, but would fail by reason of lack of strength.
1027 ALF (Surat.)	1 1/16	Slight leaf, but cleans easily.	Creamy and bright.	Good.	Very useful cotton, and large quantities could be used in Lancashire. Fully equal in value to (Universal) Middling American.	Very good.	This cotton makes a clean, bright yarn of a marketable medium quality. Suitable up to 30s twist and 40s weft.
Sircar 14 ..	1	Large amount of small leaf.	Creamy.	Too much leaf left in.	A cotton worth cultivating, but should be sent in cleaner condition. If this was done the cotton would be fully equal to Universal Middling.	Good.	This cotton produced a good yarn, very strong and even, but rather too much leaf. It is capable of being spun to 36s twist and 40-44s weft of medium quality.
Sircar 25 ..	1	Very clean.	Creamy.	Fairly well ginned.	A cotton worth cultivating. It is slightly below Universal Middling in value, but would be very useful in Lancashire.	Did not work well owing to harshness of fibre and difficulty in introducing twist.	Makes a clean, bright and even yarn of moderate strength. Compares reasonably with medium quality American yarn. Suitable up to 20s twist and 30s weft.

Spinners' Comments.—No. 4 Firm.

	On the Raw Cotton.					On Behaviour in Working.	On the Yarns Produced.
	(Staple Isn.)	Seed and Leaf.	Colour.	Ginning.	Generally.		
Karunganni.	8/8	Contains full unbroken seeds, but only slightly leafy.	Beautiful creamy white.	Too many full seeds, otherwise fairly good.	A very nice Indian cotton of fine texture, good colour, bright, and fairly clean, but too short in staple to spin by itself counts higher than 18s to be of commercial value.	Very poor spinning, cotton being too soft; will spin up to 18s counts, but to do this will require many extra turns in twisting in both card-room and spinning-room.	—
Sircar 14. ..	1 3/32	Fairly free from both seed and leaf.	Bright but creamy colour similar to Cambodia.	Good.	A very nice class of Indian cotton. Fine silky texture. Good in colour., staple, brightness, cleanliness, and regularity. Similar to good-class Cambodia. A fair substitute for American Boweds cotton. Will spin by itself into 22s counts of commercial value.	Fairly good spinning cotton up to 22s counts. Does not require any extra twisting in card-room, but does require extra twisting in spinning-room.	—
Gadag No. 1.	1 1/32	Very leafy and much broken seed.	Rather dull and creamy.	Not satisfactory (too much broken seed.)	Fair staple, fine texture, brightness and cleanliness *not satisfactory*. Too short in staple to spin finer than 24s counts by itself to be of commercial value.	Good spinning cotton, run in both card-room and spinning-room with same turns as Boweds American. Its peculiar feature is that it leaves quite a quantity of loose fly or fibre on the roller beam of the spinning mule.	Will spin nicely up to 24s counts.

APPENDIX VIII.

THE FINANCE OF THE COTTON CROP UP-COUNTRY.

Question 1.

" What methods does the cotton grower usually resort to for the finance of his cotton during cultivation and after harvest ?"

Question 2.

" In what areas and to what extent is the cotton crop of the average cultivator (*a*) mortgaged in advance on account of loans taken to finance the cultivation of the crop and (*b*) sold in advance of harvest, and, if so, on what conditions ?"

Question 3.

" To what extent are cultivators driven to sell their cotton immediately through lack of financial power to hold it ?"

Question 4.

" What marketing systems are in force in the province or tract with which you are acquainted ? To what extent does the cultivator receive an unduly low price because of lack of proper market facilities rather than because he is pressed for money ?"

Question 5.

" Is it possible for cultivators to obtain loans on the security of cotton deposited for sale, if so, to what extent and what rate of interest are they charged for such loans ?"

Question 6.

" In your opinion are warehousing or other storage facilities necessary to enable the cultivator to hold and finance his cotton ?"

Question 7.

" In the area reported on are there any Co-operative Cotton Sale Societies at work ? If so, on what lines do they work ? In particular what is the method of sale adopted and what percentage of the value does the Society advance against cotton or kapas delivered ? Is any provision made by legal agreement, or by the rules of the Society, which secures for the Society a sufficient proportion of its members' produce to enable it to sell to advantage or can members utilise the Society when it suits them only and sell outside on occasions when prices are tempting ? Is the cotton or kapas sold on individual account or is the produce of members pooled ?"

Question 8.

" If no Cotton Sale Societies are in existence, have they been tried ? Are there any particular local difficulties in dealing with the sale of cotton by co-operative methods ?"

Question 9.

(*a*) " If there are substantial cotton growers in the tracts with which you are acquainted who control considerable areas, what methods do they adopt for the financing of their crops and how do they market them ? "

(*b*) " Are there any marked differences as compared to the methods adopted by smaller growers, and have such large growers any special difficulties in marketing their crops to the best advantage ?"

Question 10.

"What organised banking facilities exist in your area for the finance of the cotton crop ?"

"Are such facilities sufficient ?"

Note.—Under banking facilities are included private Indian Bankers and Shroffs as well as Joint Stock Banks.

APPENDIX IX.

FINANCE OF THE COTTON CROP.

VILLAGE INVESTIGATION.

General for each Village.

1. Name of village.
2. Total cultivated area.
3. Area under cotton this year.
4. Area under cotton last year.
5. How does this year's crop compare with last year's ?
6. Is the crop this year earlier or later than usual, and how much ?
7. What is (are) the nearest cotton market (s); what is the distance ; and Is the road good, fair or bad ?
8. Is there any storage accommodation for *kapas* in the village ?

INFORMATION TO BE OBTAINED FROM EACH COTTON GROWER.

Village.
Name of cotton cultivator.
Is he a proprietor or tenant ?
Total area of his holding.
Area under cotton.
(Survey numbers.....)
Anticipated yield of *kapas.*
Variety.

1ST PERIOD.

Information between.....

1. Has any advance been taken for cultivation up to date ?
2. If so, how much ?
3. What amount has been signed for ?
4. Rate of interest.
5. Source of advance.
   (Co-operative Society, Sowcar, cotton trader.)
6. Is there any bond to sell *kapas* through the lender, or to the lender ?
7. Is the crop already sold, and the price fixed either on acreage or on weight? If so, to whom and for what price ?

2ND PERIOD.

Information between.....

1. How much *kapas* has been picked so far—approximately ?
2. Has any advance been taken on this *kapas* ?
3. If so from whom, and under what conditions ?
4. Has any *kapas* been actually sold ? If so, to whom and where, and when ?
   Was it sold through a dalal or arti ?

5. Has the money been received for this *kapas* ?
6. What was the rate ?
7. What was the money actually received ?
8. Where was the *kapas* delivered ? How far away ? Who paid for cartage ?

3RD PERIOD.

Information between.....

1. What was the quantity of your whole crop of *kapas* ?
2. How much now remains with you ?
3. Have you received the whole money due on the *kapas* sold ?
4. How many carts were sold locally, and how many were carted to the market and sold there ?
   (If quantities small state weights.)
   If sold in the market, was it sold through a broker ?
   Was the cotton sold outright or deposited with an arti or bania for sale ?
5. Did you ascertain the market rates before selling ? If so, how ?
6. Has an advance been taken on the *kapas* remaining with you ?
7. If so, from whom and under what conditions ?
8. What rate are you now offered for this *kapas* locally ?
   (Market rates can be found separately.)

General.

(Such information as can be obtained about difficulties in marketing, in finance, and in holding for higher prices.)

1. Would an open cotton market with open prices be any advantage to you ? If so, how ?
2. Is there any difficulty in knowing the rate at which your agent sells your *kapas*, and in recovering the full money ?
3. Are deductions made from the price ?
4. If so, what are they said to be for—and what rate is said to be charged ?
5. If you take *kapas* to market, and cannot get a good rate for your cotton, what do you do with it ?

MARKET INVESTIGATION.

Instructions.—A book is provided for each day's work. The general information required for each market will be obtained gradually. Spare pages are provided at the end of each book for the notes you will make in this connection.

Information to be obtained each day.

1. Name of market.
2. Date.
3. The market rate ; when fixed.
4. Any change in the rate during the day.
5. Were any Bombay rates posted up, if so, what rates and when ?

Information to be obtained from individuals bringing Kapas to Market for sale.

1. Date.
2. Was the *kapas* grown by you or have you bought it ?
3. What is the rate which you have accepted ?
4. What money have you received ?
5. What weight of *kapas* have you brought ?
6. To what deductions have you agreed ?
7. Have you taken an advance and if so, of what amount and from whom?

General information to be obtained for each Market.

*1. How is the market managed ? Attach a copy of any local by-laws or rules regulating trading in *kapas* or cotton.
*2. Is there any local Market Committee of any kind ; if so, who are the members ? What are their occupations ?
†1. Attach a copy of the local by-laws and rules.
†2. Who are the members of the Market Committee ?
3. Describe in detail how sales are conducted.
4. Can cultivators bringing *kapas* to the market sell direct or must they employ brokers ?
5. What is the system of buying ? Do buyers buy direct or employ brokers?
6. Do brokers and arhatyas act for *both* buyers and sellers ?
7. Do buyers give advances against *kapas* deposited for sale, if so, what percentage of the value and at what interest ?
8. If daily (or opening) rates are fixed, how is this done, and how are they announced ?
9. Are Bombay rates posted in the market regularly ? If so, what rates and how obtained ?
10. Are there any arrangements for storage in the market ? Is *kapas* stored in artis' shops, or godowns, or in ginning factories, *on sellers' account* ?
11. Do the market records show daily arrivals ? Compile a statement of daily and monthly arrivals for last season from the records available and of prices for the same dates.
12. State the system of weighment in use. Are there any complaints from cultivators about weighments, if so, what ?
13. How is the weighman paid and how much ? By whom is he employed ?
14. What are the allowances and deductions customary in the market ? Is there any complaint from sellers that these are unfair ?

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* For Khandesh enquiry.

† For Berar enquiry.

APPENDIX X.

GOVERNMENT OF INDIA.

DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

(Agriculture).

SIMLA, *the 24th of July*, 1925.

Press Communique.

Owing to the serious ravages in America of the Mexican Cotton Boll Weevil and the danger of its effecting an entry into India in imported American cotton, the Government of India have had under consideration the question of taking preventive measures against its introduction. Experience in America has shown that once this pest has established itself no measures however costly have much effect in combating its extreme destructiveness. Although the average imports of American cotton are very small the total prohibition of such imports is not considered desirable except as a last resort as Indian mills in certain years utilise this cotton when the supply of Indian stapled cotton is short. The lines on which it is proposed to take action, with effect from the 1st of October, 1925, are now published for the information of the trade in general.

2. It is proposed that under the Destructive Insects and Pests Act, 1914 (II of 1914), the importation of American cotton should be allowed only after proper fumigation. There are obvious advantages in restricting the entry to one port at which adequate fumigation facilities can be provided, and as the imports of American cotton during the past few years at ports other than Bombay have been negligible it is proposed to allow imports only through the port of Bombay for the present. As the cotton will be fumigated in barges before landing it will be impossible to do it satisfactorily during the monsoon period, and it is therefore proposed to limit the importation to the fair season between the 1st of November and 31st of May. In order to ensure the orderly progress of fumigation importers will be required to obtain advices by cable of all shipments of American cotton at the time of despatch from the foreign port and to notify the authority appointed to supervise the fumigation.

3. The necessary equipment and staff for fumigation will be provided by Government and a charge for fumigation made to importers which, including extra handling charges, is estimated at not more than Rs. 3 per bale.

GOVERNMENT OF INDIA.

DEPARTMENT OF EDUCATION, HEALTH AND LANDS (AGRICULTURE).

SIMLA, *the 25th September*, 1925.

Press Communique.

In July last the Government of India announced that, owing to the serious ravages in America of the Mexican Cotton Boll Weevil and the danger of its effecting an entry into India in imported American cotton, they had decided to allow the importation into India of such cotton under the Destructive Insects and

Pests Act, 1914 (II of 1914), only through the Port of Bombay and after proper fumigation, between the 1st of November and 31st of May each year. Action on these lines was to have been taken from the 1st October, 1925. Owing, however, to delay in the arrival of some parts of the necessary equipment, it has been decided not to bring these restrictions into force before the 1st December, 1925.

GOVERNMENT OF INDIA.

DEPARTMENT OF EDUCATION, HEALTH & LANDS.

No. 1493—*Agriculture.*

DELHI, *the* 14*th November*, 1925.

NOTIFICATION.

In exercise of the powers conferred by sub-section (1) of Section 3 of the Destructive Insects and Pests Act, 1914 (II of 1914), hereinafter referred to as the said Act, the Governor-General in Council is pleased to issue the following order for the purpose of regulating the import into British India of American cotton :—

1. In this order—

(*i*) " Cotton " includes all ginned cotton, whether baled or loose, but does not include cotton seed or unginned cotton.

(*ii*) " American cotton " means all cotton produced in any part of America.

2. On or after the 1st December, 1925, American cotton shall not be imported into British India by means of the letter or sample post and shall not be imported by any other means save through the port of Bombay between the first of November and the thirty-first of May in any year and subject to the following conditions :—

(*a*) On or before the departure of a ship carrying a consignment of American cotton for Bombay from the port from which the cotton is consigned the consignee shall ascertain the name of the ship, the probable date of its arrival in Bombay and the number of bales of American cotton contained in the consignment and shall furnish this information to the Collector of Customs, Bombay, as soon as possible and in any case not less than three weeks before the arrival of the ship ;

(*b*) on arrival at Bombay, the cotton shall be disinfected in such manner as shall be prescribed in rules made by the Government of Bombay under Section 5 of the said Act ;

(*c*) prior to landing the cotton the importer shall pay or agree to pay a sum at a rate fixed by the Governor-General in Council sufficient to cover the cost of fumigation.

(*Sd.*) R. B. EWBANK,

Offg. Secretary to the Government of India.

GOVERNMENT OF INDIA.

DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

No. 1560—*Agriculture.*

DELHI, *the 26th November,* 1925.

NOTIFICATION.

In exercise of the powers conferred by sub-section (1) of Section 3 of the Destructive Insects and Pests Act, 1914 (II of 1914), the Governor-General in Council is pleased to direct that the following amendment shall be made in the order published with the notification of the Government of India, Department of Education, Health and Lands, No. 1493-A, dated the 14th November, 1925, namely :—

In clause (*a*) in paragraph 2 of the said notification for the words "and in any case not less than three weeks before the arrival of the ship" the following shall be substituted, namely :—

"Save where the cotton is loaded for Bombay at a European port the ordinary length of voyage from which is less than three weeks, this information shall be furnished not less than three weeks before the arrival of the ship at Bombay."

(*Sd.*) R. B. EWBANK,

Offg. Secretary to the Government of India.

No. 1561—*Agriculture.*

DELHI, *the 26th November,* 1925.

NOTIFICATION.

In pursuance of clause (*c*) in para 2 of the Notification of the Government of India, Department of Education, Health and Lands, No. 1493-A., dated the 14th November, 1925, the Governor-General in Council is pleased to fix the rate at which the sum therein referred to is to be paid at Rs. 3-6-0 per bale, or in cases in which the importer has failed to furnish information in accord with clause (*a*) in ara 2 of the said notification at Rs. 5-6-0 per bale. This rate shall cover the cost of fumigation including the cost of loading the cotton into the barge, conveyance to the fumigation wharf or bunder, unloading from the barge after fumigation and delivery at the bunder, but not including import wharfage. Provided that the minimum fee for the fumigation of any consignment of cotton shall be rupees one hundred and fifty.

2. In the case of samples of American cotton imported by parcel post, or as ship's parcels not exceeding 20 lbs. each in weight, the consignee shall pay a fee for fumigation of rupees two for each parcel.

(*Sd.*) R. B. EWBANK,

Offg. Secretary to the Government of India

GOVERNMENT OF INDIA.

DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

No. 76—Agriculture.

DELHI, *the* 14th *January*, 1926.

NOTIFICATION.

In exercise of the powers conferred by sub-section (1) of Section 3 of the Destructive Insects and Pests Act, 1914 (II of 1914), the Governor-General in Council is pleased to direct that the following further amendment shall be made in the order published with the notification of the Government of India, Department of Education, Health and Lands, No. 1493-A., dated the 14th November, 1925, namely :—

For clause (*a*) in paragraph 2 of the said notification, the following clause shall be substituted, namely :—

" (*a*) on or before the departure of a ship carrying a consignment of American cotton for Bombay from the port from which the cotton is consigned, the consignee shall ascertain the name of the ship, the probable date of its arrival in Bombay and the number of bales of American cotton contained in the consignment, and shall furnish this information to the Collector of Customs, Bombay, not less than three weeks before the arrival of the ship at Bombay ; provided that where the cotton is loaded for Bombay at Port Said or at a European port the ordinary length of voyage from which is less than three weeks, it shall be sufficient to furnish the information not less than 10 days before the arrival of the ship."

(*Sd.*) R. B. EWBANK,
Officiating Secretary.

GOVERNMENT OF INDIA.

DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

No. 144—*Agriculture.*

DELHI, *the 26th January*, 1926.

NOTIFICATION.

In pursuance of clause (*c*) in paragraph 2 of the Notification of the Government of India, Department of Education, Health and Lands, No. 1493-A., dated the 14th November, 1925, the Governor-General in Council is pleased to direct that the following amendment shall be made in the notification of the Government of India, Department of Education, Health and Lands, No. 1561-A., dated the 26th November, 1925, namely :—

In paragraph 1 of the said notification for the words "but not including import wharfage" the following shall be substituted :—

"but not including docks import charges as specified in the Bombay Port Trust Scale of Rates charged at the docks."

(*Sd.*) J. W. BHORE,
Secretary to the Government of India.

GOVERNMENT OF BOMBAY.

REVENUE DEPARTMENT.

BOMBAY CASTLE, 26*th November*, 1925.

No. 4388/24.—In exercise of the powers conferred by Section 5 of the Destructive Insects and Pests Act, 1914, (II of 1914) the Government of Bombay (Transferred Departments) is pleased to make the following rules for the detention and disinfection of American cotton, the fumigation of which is required by the notification of the Government of India in the Department of Education, Health and Lands, No. 1493-Agriculture,* dated the 14th November, 1925, and of cotton which has been in contact or proximity thereto and for regulating the powers and duties of the fumigation authority, namely :—

(1) These rules may be called the Fumigation of American Cotton Rules, 1925. They will come into force from 1st December, 1925.

(2) Except as provided in Rule 5, no American cotton or any other cotton the fumigation of which is required by the notification of the Government of India in the Department of Education, Health and Lands, No. 1493-Agriculture,* dated 14th November, 1925, hereinafter called the said notification, or any other cotton which may have been in contact or proximity thereto shall be landed without fumigation. Such cotton shall, on arrival at Bombay, be fumigated with hydrocyanic acid gas. Fumigation shall be carried out by the Trustees of the Port of Bombay on behalf of Government. Such cotton shall be taken overside from the vessel into barges provided by the fumigation authority and shall be conveyed to the fumigation wharf or bunder in such barges, delivery being given at the fumigation wharf or bunder only after fumigation. The rate of discharge of cotton from vessels shall be so regulated as not to exceed the capacity of the barges provided for the purpose.

(3) Cotton other than American cotton which is imported into British India in a vessel carrying American cotton and loaded in the same hatch as any bale or bales of American cotton shall be deemed to have been in contact or proximity thereto and shall be subject to the restrictions and conditions specified in the said notification.

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* Republished at page 3023 of Part I of the *Bombay Government Gazette*, dated 26th November, 1925.

(4) For the purposes of these rules the fumigation authority shall be the Collector of Customs, Bombay, or such officer as he may appoint.

(5) Samples of American cotton imported by parcel post, or as ships' parcels not exceeding 20 lbs. each in weight, shall be fumigated on arrival with hydrocyanic acid gas, or such other fumigant as may be approved by the Governor-General in Council, at the Customs House.

(6) All cotton the fumigation of which is required by the said notification or under these rules shall be at the sole risk of the importer during landing, transhipment and fumigation and no liability for loss or damage due to fumigation shall attach to Government or its agents.

(7) Any breach of these rules shall be punishable with a fine which may extend to Rs. 1,000.

By order of the Government of Bombay (Transferred Departments),

G. A. THOMAS,

Secretary to Government.

APPENDIX XI.

THE PRESENT POSITION OF COTTON RESEARCH IN INDIA.

INTRODUCTION.

The position of cotton research in India was reviewed by the Indian Cotton Committee in 1917-18 and has received constant attention from the Central Cotton Committee since 1921. In putting forward their proposal for the cotton cess the Committee drew attention to some of the outstanding cotton problems requiring attention and several of these are now under investigation with the aid of grants from cotton cess funds. In December 1924 the Committee decided that the time had now come to adopt a more definite research programme. A note* by Mr. Hilson was circulated and arrangements made for a full discussion of the subject at a special meeting of the Agricultural Research Sub-Committee in February 1925. The Sub-Committee's conclusions were discussed, amended and adopted by the full Committee during the succeeding week. The report in its present form records the considered findings of the Indian Central Cotton Committee though rearranged for publication.

Nearly all the work which has been done in the past for the improvement of cotton growing in India has been carried on by the Provincial Agricultural Departments and future progress must continue to depend largely on their efforts. It is obvious, therefore, that without a general review of work in progress the Committee could not profitably have discussed their own programme. It is from this aspect that work in progress has been discussed and not in any spirit of criticism of the policies adopted by various Agricultural Departments in their efforts to meet local needs. The Indian Central Cotton Committee can only supplement such work and since their funds are limited must obviously concentrate on those lines of scientific enquiry which are of the widest interest to India as a whole.

Attention is also invited to the information collected in the Committee's Bulletin on the demand for the various types of Indian cotton and to the conclusion there drawn that at present the ratio of medium to short stapled cottons in the Indian cotton crop is too low.

One can approach a discussion of this nature from at least two distinct standpoints—the technical and the economic. Both these aspects have been considered in the report. Mr. Hilson's note, which was prepared as a basis of discussion, explains the bearing of studies in heredity and of environmental effects on the practical problems which it is desired to solve. This note forms an appendix to the report. The report of the Indian Cotton Committee (1917-18) dealt with conditions in the various cotton-growing tracts and made detailed recommendations for the improvement of the various agricultural and commercial varieties. By examining the position from both aspects it is hoped that not only have the technical problems been more clearly formulated but their bearing on the Indian cotton supply explained.

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* Appendix (page 104).

I.—The Policy in Regard to Agricultural Research Followed by the Indian Central Cotton Committee Hitherto.

The necessity of a definite policy as well as of a programme of work is obvious. It is of importance, therefore, to consider the extent to which a policy has already been settled in the earlier discussions of the Committee, the extent to which this is being followed and whether the indications obtained from about one-and-a-half years' work show that we are on right lines.

At the first meeting of the Indian Central Cotton Committee it was decided :—

(1) That Technological Research should be under the Committee's own direction and control.

(2) That Agricultural Research should be promoted by (*a*) grants-in-aid to Provincial Agricultural Departments and other institutions, and (*b*) the creation of research studentships.

(3) At the third and subsequent meetings the necessity for a Central Agricultural Research Institute for cotton work was emphasised.

(4) The various discussions in Committee and the statement of our objects made to the Legislative Assembly on our behalf by the Government of India may be summarised fairly as follows :—

(*a*) Grants-in-aid should be in support of schemes of more than local importance.

(*b*) The Committee desire by every means in their power to provide for more qualified research workers on the problems connected with cotton improvement.

(*c*) Care must be taken to supplement the work of Agricultural Departments and not to compete with them or to permit the use of cotton cess funds to enable Local Governments to reduce their own expenditure on cotton improvement.

(*d*) The Committee adopted the principle of subsidising existing institutions for special investigations on the grounds that this procedure would enable advantage to be taken of existing buildings, land, equipment and experienced staff and was thus likely to lead to the maximum return from a limited expenditure.

The policy laid down has been followed in respect to all schemes for which grants have been given and every grant given has enabled new work to be started. The Committee's grants have enabled 43* more full-time scientific workers and 10 research students to be employed on cotton problems.

The new Institute of Plant Industry at Indore, which the Committee's grants have made possible, provides an agricultural research station which is not only situated in the largest homogeneous cotton tract in India but is ideally placed for the investigation of the many urgent problems which this tract presents.

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* Including appointments which will be filled during the coming year.

II.—Work in Progress.

The Study of Hereditary Characters.

All work on cotton genetics in India is being carried out incidentally to practical plant-breeding work which has an immediate economic objective, *viz.*, the improvement of the cotton of particular tracts. This is all to the good provided that short-sighted views of immediate needs do not prevent the more purely scientific work from being completed.

Yield.—A great deal of fundamental work was done by Dr. Leake in the United Provinces which has been of much use to other workers. It is understood that the Assistant Economic Botanist who is now responsible for cotton work in the United Provinces is mainly occupied with the working up, from the practical and economic aspect, of the material left by Dr. Leake.

In Madras, Hilson has work in progress which though definitely economic in character includes the study of the inheritance of characters. The same applies to the work of Kottur and Patel in Bombay, Youngman in the Central Provinces and Thadani in Sind.

So far as the Committee's research grants are concerned, the assistance which we have given has enabled a detailed study of the *Oomras* cottons to be undertaken in the Central Provinces and Berar and in the course of that work unit species are being studied. The research which we are financing at Dharwar on the improvement of the Bombay Upland-American type by hybridisation, also affords considerable opportunity for the study of hereditary characters. The Madras *Herbaceum* cotton scheme in its present stage is again largely a matter of the identification and separation of unit species and here again the inheritance of characters is being studied. It is, however, at the Indore Institute of Plant Industry that the Committee are making the most definite provision for work on these lines; this will be referred to later.

It is probably a fair review of the *present* position to say that far too little work is in progress on the analysis of the hereditary characters which determine the yield of cotton per acre.

Quality.—In regard to the study of the hereditary characters determining quality the Committee have already taken the initiative by providing facilities for the testing of cottons and for the study of the cotton fibre. The Committee's Spinning Laboratory now provides a means of actually testing cottons to determine if they are satisfactory from a spinner's standpoint and this in itself is a great step forward so far as actual plant-breeding work is concerned. But one cannot study the heredity of a compound of innumerable characters, hence technological and agricultural research are essentially complementary. What is most urgently needed is a statement of the extent to which the various measurable characters of the cotton fibre are significant in determining spinning value. This is the other branch of the work now being undertaken at the Committee's technological laboratory. It is unnecessary to go into detail as the question of the aims and functions of that laboratory have been stated very fully in a recent publication.*

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* Pamphlet on the Technological Laboratory published in connection with the opening ceremony by His Excellency the Viceroy.

Work in progress for the improvement of existing varieties by modern plant-breeding methods.

The practical application of plant breeding work is more obvious if considered from another standpoint, *viz.*, to which of the existing agricultural varieties modern plant breeding methods are being applied to secure improvement in quality and yield. This is shown very briefly in the following table :—

Bombay†	..	Surat	.. Improved types in cultivation and further work in progress. The type 'Surat 1027 A.L.F. with a staple length of 1" (full) is now grown on 175,000 acres.
		Broach	.. Work in progress and several new types undergoing field trials.
		Dholleras	.. The most important (*Wagad*) component is under study and pure strains have been obtained and are being tested. The *Lalio* area is really an extension of the Broach area and is therefore covered by the work on Broach.
		Khandesh	.. Work in progress to obtain a superior type by hybridisation.
		Kumpta	.. Improved types in cultivation and further work in progress. The Dharwar No. 1 type has now reached 75,000 acres.
		Dharwar-Upland	. An improved type, Gadag No. 1, is now grown on 65,000 acres. Further work is in progress.
Sind ..	..	Bengal-Sind	.. Selection of types in progress and one strain is coming into general cultivation.
		Sind-American	.. The Punjab 4F type is cultivated to the extent of some 16,000 acres. Pure strains of acclimatised American cottons have been isolated and are under field test. The prospects of long-staple cotton-growing have been immensely improved by the commencement of work on the Lloyd Barrage Canal system and special provision is being made for experimental work on new lines.

† The Baroda cotton growing areas are much inter-linked with those of the Bombay Presidency and by arrangement a uniform policy for the introduction of new strains is followed by the two departments.

Madras ..	Tinnevelly ..	A very large proportion of the area is now under the Karunganni type. An improved type of Karunganni (Company cotton) is grown on 72,000 acres. The detailed botanical study of this variety has been started recently.
	Cambodia ..	Improved types are now in general cultivation. Further work is in progress with the object of securing better types either by selection or hybridisation.
	Northerns ..	The pure strain N14 (of fully 1" staple) is now grown on 21,000 acres. Further work is in progress.
	Westerns ..	The improved type H25 is now grown on 81,000 acres. Further work on pure strains is in progress in connection with a general study of the Madras *herbaceum* cottons.
	Cocanadas ..	Work on this variety has been started very recently.
Central Provinces :	Oomras and C. P. types.	Previous work has been mainly limited to the improvement of yield and ginning percentage by selection resulting in the *Roseum* type. Work for the improvement of staple is now in progress and also for the selection of wilt-resistant types.
	Central India type	Practically no work done yet.
	Central India ..	These cottons will be studied at the Institute of Plant Industry, Indore.
Hyderabad ..	Bani ..	The re-establishment of the best type by distribution of the seed from good areas has met with considerable success. No scientific work in progress.
United Provinces .	Bengals ..	A high-ginning short-staple type is in general cultivation in the West. A superior staple (Bundelkhand) type coming into cultivation. Hybridisation work referred to previously. A detailed survey has been made of the cottons of some districts.

Punjab ..	Punjab-American.	The area* under this variety in 1923-24 was 604,000 acres of which 582,000 acres was estimated to be under strain 4F and 21,000 acres under strain 285F. The further study of these cottons is the subject of one of the Committee's research schemes.
	Indigenous ..	The indigenous types have been fairly completely surveyed and work is in progress for the provision of better types for the unirrigated tracts.
Burma ..	Wagale & Wagyi.	Now under study under the supervision of the Deputy Directors of the Myingyan and West Central Circles respectively.
Mysore ..	Kumpta type ..	Pure line selection work in progress.
	American type ..	Work for improvement by hybridisation in progress.
Bengal ..	Garo Hill type (*G. Cernuum.*)	Is receiving attention from the Bengal Department of Agriculture.

The present position may be summarised as follows :—

In the existing long-staple tracts steady progress has been made in improving both staple and yield by selection. In new long-staple tracts the introduction of acclimatised exotics has brought about the replacement of short-stapled cottons by long in two outstanding instances, *viz.*, Punjab-American and Cambodia and in both cases, work is in progress to obtain better strains.

In short-staple tracts some work for the improvement of staple is in progress but the main successes have been in the improvement of yield and ginning percentage. Practically no work is in progress for the production of long-staple types to replace the 5/8″ staple type. This is by far the most difficult problem and yet the most essential if our aim is to raise the production of long-staple cotton in India to the proportion which is needed to safeguard the grower and to enable the Indian mill industry to progress.

Environmental Factors.

It is not so simple to summarise all work in progress under this head, as to do so would involve a summary of all the work of Agricultural Departments on cotton. But so far as the study of problems of general importance is concerned and excluding manures, manuring and local problems, probably the following is a fairly complete summary :—

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* 934,000 acres in 1924-25.

(*a*) *The water requirements of the cotton plant.*—For the tracts which grow cotton under irrigation a certain amount of information has been collected in connection with varietal and other field tests. Such experiments have been mainly directed to the determination of the effect on *yield* of different numbers of irrigations at varying dates. Some preliminary information has been collected as to the effect of shortage of irrigation water on lint quality. Important as it is, the irrigated cotton area, however, is only a relatively small proportion of the Indian total and so far as rain-fed cottons are concerned little has been done as yet to determine the exact effect of excessive rainfall or to design methods of amelioration. In the Bombay Presidency, as part of a general investigation of conditions in tracts of markedly defective rainfall, the employment of a Soil Physicist has enabled progress to be made in the designing of cultural methods which enable better use to be made of a limited precipitation and better crops raised.

(*b*) *Bud, flower and boll shedding.*—The causes of loss of crop by shedding are being investigated at Surat, with the aid of a grant from the Committee, as part of a study of the physiology of the *Herbaceum* type of cottons in Gujerat. Mr. Hilson has done a considerable amount of work on this subject at Coimbatore the results of which are now in the press*, but lack of staff has prevented the work being further developed.

(*c*) *Effect of season and other environmental factors on quality.*—Since work on this group of problems necessarily involves an organisation for testing cottons for quality it has only now been rendered possible by the opening of the Committee's Technological Laboratory. Collaboration between the laboratory and agricultural investigators will be necessary and attention is invited to Section V of Mr. Hilson's memorandum.

(*d*) *Pests and diseases.* (1) *Pests.* (1) *Pink Bollworm.*—The Madras Agricultural Department has practically completed the study of pink bollworm in that Presidency ; a Pest Act was put into operation and has been proved to be a satisfactory method of dealing with the pest under their conditions.

In Northern India the life history and distribution of this insect is being studied both in the United Provinces and the Punjab. A special investigation, the object of which is to design control measures, is being carried out at Cawnpore with the aid of one of the Committee's research grants.

(2) *The Spotted Bollworms.*—At Surat one of our research grants has enabled an investigation to be undertaken on the spotted bollworms which constitute the principal pest of cotton in many parts of India and are important in practically all cotton growing tracts. Some work is also in progress in the United Provinces and the Punjab on these pests.

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* Pusa Bulletin No. 156.

(3) *The Stem Weevil.*—The stem weevil is an important pest in Madras where it is extending; it is also important in some years in Gujerat and exists in the Punjab. The life history of *Pempheres** has been studied by Ballard at Coimbatore and the results published. Control measures have yet to be worked out, but no staff is available for the continuance of the work.

(4) *Jassids, etc.*—The extent to which some varieties of American cotton are attacked by this group of insects is familiar to most agricultural officers. Fortunately the fact that hairy-leaved cottons are but little affected was recognised at an early stage and the trouble was overcome by the selection of such types. But this limitation gives rise to other difficulties in certain tracts and, further, even hairy types are not always immune. It is clear that further work is needed.

(5) *General.*—At the Pusa Research Institute a considerable amount of work on the life histories of the major cotton pests has been carried out, thus providing valuable information for workers in other parts of India.

(II) *Diseases.*—The outstanding cotton disease is wilt. The Committee are financing two investigations on this subject, one at Dharwar and one at Nagpur and the two investigators are tackling the problem from different aspects. This duplication is justified not only by marked differences in the agricultural conditions of the two tracts, but by the difficulty and importance of the problem.

Probably insufficient attention has been paid in the past to the physiological aspect of plant diseases. A study of the reasons underlying the varying resistance of different strains of cotton to disease and insect attack should provide important indications as to possible methods of control.

Summary.—Though there are important gaps, which will be referred to later, the above abstract might indicate at first sight that a large part of the field is being covered. It is only on considering the staff employed that one realises the entire insufficiency of present efforts. Good work has been done, and is being done, but every agricultural officer knows and admits that progress is greatly retarded by lack of a sufficient number of qualified workers.

III.—Problems Awaiting Investigation.

It is now necessary to consider which are the most important problems still awaiting investigation. For the purposes of the present discussion it is convenient to exclude soil surveys and the general study of manures and manuring. Not only do these questions form a section of the normal work of every Provincial Agricultural Department but they are not best approached from the standpoint of the needs of a single crop.

Dealing first with the more purely scientific side the position is somewhat as follows :—

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* Pusa Memoir.

1. *Cotton genetics.*—Our knowledge of the factors determining yield and quality and of their inheritance is most imperfect. In regard to quality, the plant breeder requires to be told what measurable characters of the lint are most important. It is one of the main objects of the Committee's Technological Research Laboratory to ascertain the bearing of these characters on spinning value. Some work is being done on cotton genetics by Agricultural Departments and in connection with the Committee's research schemes and such studies will form an essential portion of the cotton research programme of the Indore Institute of Plant Industry. Much more work is required than is in progress at present.

2. *Unit species.*—The isolation, identification and study of the unit species (or pure lines) of which the agricultural varieties are composed is a most important part of all work for the improvement of plants. While this has been by no means entirely neglected in the course of the work which has been done, and is being done, no agricultural variety has been worked through completely. This question has been given great prominence in the programme of work of the Institute of Plant Industry at Indore. It is hardly possible to over-emphasise its importance.

3. *The systematic botany of cotton.*—This is still in considerable confusion, largely because it has never been tackled thoroughly from the modern aspect. Success here must depend on the satisfactory carrying out of the study of unit species.

4. *Root characters.*—The root systems of various cottons and their relation to the yield and quality of cotton grown on different types of soil have been little studied. This aspect of cotton improvement will now be investigated at Indore, but should also receive attention in other tracts. A study of the root systems of cotton grown on the silt soils of Northern India is obviously necessary and could well be made an important item in the Committee's Punjab research scheme. Many experienced agricultural workers consider that work in this direction is likely to provide an explanation of low yields and of its unsatisfactory or variable quality.

5. *The water requirements of the cotton plant.*—The importance of a study of the water requirements of different types of cotton and the effect of either an excessive or defective supply on yield and quality is not only obvious but has been strongly urged on more than one occasion.* As has been stated above, some preliminary results have been obtained but there is great need for exact work under both irrigation and rainfall conditions. Probably the Committee's grant for the Punjab research scheme will enable a commencement to be made in the study of this problem under Canal Colony conditions and it is understood that work of this nature is contemplated in Sind also. For the non-irrigated tracts the loss of crop caused by excessive or untimely rainfall is perhaps the most important factor. Here the question appears to be largely a question either of root development and soil aeration or of the effect of climatic factors on bud, flower and boll shedding; these again are obviously related. The necessity for thorough and exact experimental work can hardly be over-emphasised.

6. *Boll, flower and bud shedding.*—Reference has already been made to the work in progress but it should be emphasised that more extensive investigation is necessary and that such work should be developed until definite conclusions are reached. Only for very limited areas has even approximate information as to

* See Proceedings, Board of Agriculture in India, Poona, 1917.

the extent of such shedding been obtained and only in the two instances referred to above has an attempt been made to ascertain the relative importance of insect attack and physiological causes in shedding. The effect of such shedding on yield and quality has not been quantitatively determined.

In particular it appears necessary to provide for the continuation and development of the work at Coimbatore.

7. *Effect of climatic conditions on lint quality.*—Attention is invited to Section V of Mr. Hilson's memorandum. As has been said above, such work until recently was almost impossible since a means of determining quality with some approach to accuracy is essential. The proposals involve the collaboration of a number of agricultural officers with the Technological Laboratory. The seasonal variation in quality of different standard varieties must be determined by the Technological Laboratory for its own requirements. The growing, under standard conditions on experimental plots of reasonable size, of those strains of cotton which are being pushed into general cultivation, is generally accepted as part of the normal work of a cotton station. If the extra records suggested could be maintained and utilised additional information of very real value would be obtained.

8. *Maturing of the fibre in the boll.*—Among the questions to which an answer is required are the following :—

(*a*) Why are certain pickings, often the first, inferior in quality ?

(*b*) Is there any connection between the length of the staple and the period of time which the boll requires to mature, or is the former character purely varietal ?

(*c*) What are the causes which lead to inferior cotton at the end of the crop and does soil moisture become a limiting factor before the fall in temperature or natural senescence ?

So far as the first problem is concerned it is probable that an examination of cotton from various pickings in the Technological Laboratory may show in what measurable characters the defective pickings differ from the normal as well as providing a quantitative measure of the difference in spinning value.

Expressed in another form the two latter questions may be re-stated as follows :—

Is there any climatic limitation on the maximum length of staple which can be properly matured in a given tract independently of the limitations which climatic conditions enforce in respect of the agricultural characteristics of the plant such as the length of the vegetative period ?

The importance of (*b*) and (*c*) lies in the fact that there may be a maximum length of staple, quite independent of the agricultural characteristics of the plant, which can be matured under certain climatic conditions.

9. *Insect pests.*—It follows from what has been said above that there is immediate need for further research on control measures for the stem weevil and the Jassid group.

The fact that stem weevil is spreading in Madras, where it is a major pest, and that it has been recorded as an occasional pest in other parts of India cannot be ignored. It is held by several workers that attacks by jassids, etc., prevent the introduction of certain varieties into tracts for which they would otherwise be suitable thus placing an undesirable limitation on the improvement of staple; the need for proper investigation is obvious.

10. *Causes of resistance to pests and diseases shown by certain varieties.*—There are at least two instances where practical results might be expected.

(*a*) It is generally accepted in India that cottons with fully hairy leaves are hardier and less liable to attack by certain insects than smoother-leaved varieties. (There also appears to be a linkage between hair on the leaf and fuzz on the seed.) We have at present no information as to whether the value of the hairs is entirely due to the fact that hairy varieties are unattractive to jassids and similar pests or whether the reason is more fundamental and that the hairs, by regulating transpiration, enable the plant to withstand extremes of climate.

(*b*) *The bio-chemistry of the cotton plant with reference to pests and disease resistance.*—In Madras there is considerable evidence that *Hirsutum* cottons are more susceptible to stem-weevil damage than indigenous varieties though the latter are far from being immune. There are also indications that certain strains within varieties are less susceptible than others. It is not unlikely that a difference in the composition of the cell sap is the real reason. If this were so a definite method of testing the suitability of a strain to a stem-weevil area would be available and information might be obtained which would lead to cultural methods being evolved which would reduce the damage caused by this insect.

Again, the search for wilt-resistant varieties is an important item of the agricultural department's work both in Bombay and the Central Provinces. *Hirsutum* varieties are practically immune and one of the Burmah cottons (*Wagyi*) is relatively immune. Here again a knowledge of the underlying causes of resistance would be invaluable to the plant breeder.

11. *Cotton Cytology.*—The most important recent work on this subject is that carried out at the Shirley Institute by Denham which has afforded an explanation (difference in chromosome number) why attempts to cross American with Asiatic cotton have failed. Denham's results also suggest conditions under which such crosses might conceivably be achieved. Some interesting results have recently been published by Saitzeff describing work done at the Turkestan Plant Breeding Station. Though of obvious importance to practical cotton breeding little, if any, work has been done on this subject in India and it is considered that such work should be undertaken.

12. *The improvement of existing agricultural varieties.*—In an earlier chapter of this report a review, necessarily extremely brief, has been given of work in progress for the production of improved and uniform types to replace existing mixtures. The necessity for constant attention to the improvement of staple has also been emphasised. In the following an attempt is made to point out on what varieties work is particularly needed, it being understood that the continuance and development of work already in progress is presumed.

(1) *Bani Cotton.*—This cotton is generally considered to be the original *G. indicum*. It is characterised by a low ginning percentage and, generally speaking, is a shy yielder and somewhat delicate. On the other hand, particularly if carefully ginned, it is an extremely valuable cotton from the spinner's standpoint and is probably the best of the indigenous Indian cottons in regard to staple. This cotton now exists in a tolerably pure form mainly in the Hyderabad State. Little work has been done on it from the botanical aspect and the isolation and

study of pure strains has not yet been undertaken on any considerable scale. If this cotton will grow normally at Indore the necessary work can be carried out at the Institute of Plant Industry ; if not, a study of this important cotton should be provided for either in the Hyderabad State or in a suitable part of the Central Provinces.

(2) *Malwa Cotton.*—Little work so far has been done on this promising Central India cotton but arrangements have now been made for the study of this type at Indore.

(3) *Dholleras.*—This term includes many dissimilar cottons aggregating over one-tenth of the total Indian cotton crop. The work in progress on the *Wagad* type and the position in regard to the *Lalio* constituent have been referred to. But a considerable portion of the Dholleras tract now grows the short staple *neglectum* type, known as *Matthio*, which is of an entirely different character. The improvement of *Matthio* seems to offer little prospect of success and its replacement by an early-maturing strain of *Wagad* is being aimed at. If this cannot be done further investigation will be necessary.

(4) *Bengals—United Provinces Type.*—A reference has already been made to the work in progress and to Dr. Leake's work, which was directed to the creation of hybrid cottons of definitely superior staple. It is obviously important that arrangements should be made for the continuation and development of the latter.

General remarks on problems regarding investigation.

Preservation of types obtained in the course of plant-breeding work.—In connection with their recommendations for future work on cotton genetics and the systematic botany of cotton the Central Cotton Committee desire that a point to which they attach great importance should be brought to the notice of all scientific workers on cotton. In the past many pure strains of cottons have been isolated in the course of plant-breeding work but, having been rejected as unsuitable for introduction into general cultivation, have been neither described nor maintained. As a result much important material for future work which would have been of the greatest value to later workers has been lost and instances have already occurred of work having to be repeated in consequence. It is strongly recommended that when "unit species" have been isolated and tested they should be fully described and maintained even if they are not of immediately obvious economic importance.

The relation of the Technological Laboratory to agricultural work.—It will b clear from the foregoing that the work of the Central Cotton Committee's Technological Laboratory forms an integral part of the Committee's agricultural research programme. The Spinning Laboratory now provides facilities for the testing of new cottons for agricultural departments which is in itself a distinct advance. This side of the work was intentionally established first, not only because Agricultural Departments require the information which spinning tests alone can provide but because, in the present state of our knowledge, the spinning test must form the basis of other work on the cotton fibre. It is the intention of the Committee to develop fully the work of their Research Laboratory where the measurable characters of the cotton fibre and their effect on spinning value are being studied on the lines already indicated.

The Committee's own sphere of work—It will be obvious from the foregoing that since their resources are limited the Committee must continue to leave to Provincial Departments of Agriculture the many problems of immediate practical application and concentrate on those problems which, though of definite economic importance, are more purely scientific in character and of more general application. From this standpoint the existing organisation largely covers the ground and in particular the further development of the two central research institutes (the Technological Laboratory and the Indore Institute of Plant Industry) would provide for almost as much additional work as the Committee can finance. These two institutions will need to expand in the future if they are to follow up their successes and some of the provincial aided schemes are also likely to justify further development.

Cotton literature.—Before discussing the measures to be adopted and the policy to be followed in meeting the requirements outlined above one further point of practical importance should be mentioned. Mr. Hilson's note explains in detail the difficulties met with by agricultural workers in regard to literature. The Indian Central Cotton Committee agree that work done in India for the improvement of cotton growing is quite inadequately abstracted and summarised and workers in various parts of India are not acquainted with the work done in other parts of the country. The Committee have decided, with the approval of the Agricultural Adviser to the Government of India, to arrange for the publication of abstracts of cotton literature in the *Agricultural Journal of India*. This in itself, however, is inadequate for the scientific worker needs to be kept informed of the results achieved by workers on crops other than those on which he himself is working ; not only may such results bear on his own work but a knowledge of the technique used by other investigators may be extremely useful. Hence the Committee have advised that the general question of the abstracting of Indian agricultural literature should be considered by the Board of Agriculture.

IV.—Future Policy.

An examination of the financial position of the Committee has shown that, for a period of five to six years at any rate, they can augment their expenditure on agricultural research for the improvement of cotton growing. But it will be obvious from the foregoing that there is far more work waiting to be done than the Committee could ever hope to finance even were it desirable that they should do so.

The supply of scientific workers.—Even more important than the supply of funds is the provision of scientific workers for, as has been said above, it is the paucity of qualified workers which is limiting progress. Speaking broadly, agricultural research and education in India is only some eighteen years old and, to those who know the circumstances, it is not surprising that post-graduate training in agricultural science is backward. But the fact cannot be ignored that the position to-day is very different to what it was in 1921 when the Committee first considered the question. In 1921 there was every indication that the agricultural departments in the cotton-growing provinces would be strengthened, it was understood that the recommendations of the Indian Cotton Committee (of 1917-18) for the employment of additional expert staff had been generally accepted and

that appointments would be made at an early date. That hope has not been realised and for India as a whole the loss of experienced men has more than counterbalanced any additions. A definite policy for the provision of the necessary scientific workers is therefore incumbent on the Committee.

Research Studentships.—Realising that the establishment in the country of a corps of scientific workers, experienced in the application of research methods to cotton problems, was essential to sound and steady progress the Committee at the earliest opportunity initiated their Research Studentship Scheme with that end in view. With the cordial support of experienced investigators that scheme has already become an important feature of the Committee's work and must continue to be so though disappointments will doubtless be met with. The time has now come to provide for future developments and the Committee has adopted the principle of providing a limited number of senior research studentships to enable the most successful of their junior research students to proceed further and again the experience necessary to qualify them as independent investigators. The time has not yet come, however, to provide a fixed number of such senior studentships annually. Appointments to such senior studentships may also be made from amongst highly qualified Indian graduates, who have had post-graduate experience abroad and whom it is desired to secure for cotton research work. Such senior students should be capable of undertaking, either at once or at a comparatively early date, the investigation of major problems. In exceptional cases it may be worth while sending specially selected Indian workers abroad for the study of particular problems but we do not contemplate this as a normal method of training.

Future employment of Research Students.—It is also necessary to consider in what manner trained investigators, which it is the object of the Committee's studentships scheme to provide, can best be utilised on the completion of their training. The funds at the Committee's disposal are quite inadequate to provide for all the investigations which have been shown to be necessary and it follows that many of them will not be undertaken unless, provincial departments of agriculture can secure further funds for cotton research. There is a very definite limit to the number of ex-students who can be employed on research schemes financed by the Committee. It is clear that such trained investigators as we hope to provide are badly needed in provincial agricultural departments but their absorption into those departments is complicated by the fact that, except when definite extensions of work are being undertaken, their employment might interfere with the normal promotion of men educated in the agricultural colleges who have gained their further training by practical work in the departments. It is important therefore that the Committee should obtain from Local Governments some indication as to whether they can provide larger funds for cotton research in the near future and of the extent to which men who have been trained through the medium of the Committee's research studentships can be employed.

Scientific staff for immediate requirements.—The Committee consider that in the application of the additional funds for agricultural investigations for the improvement of cotton growing they should concentrate largely on the provision of additional scientific workers.

It will be clear from our general review of the position of cotton research that not only are urgent problems being left unattacked but the further development of the work now in progress is being checked by lack of experienced scientific investigators. It seems improbable that provincial departments of agriculture will be in a position to increase their research staff appreciably during the next few years. In order to speed up the improvement of cotton growing the Central Cotton Committee have decided to modify their earlier policy and, when necessary, to employ staff themselves, which would be lent to agricultural departments where there is definite work to be done and where the Local Government would welcome them. Such staff would be definitely provided for the study of specific problems. In filling such appointments the Committee would follow its present procedure of advertising in India and abroad at the same rates of pay. But the Committee desire to state clearly that their object is to increase the number of qualified scientific workers employed in India on cotton research and not merely to improve the pay of existing workers or to encourage transfers from one post to another. It follows that the Committee would only consider employing a man already serving in a provincial agricultural department if he applied with the express permission of the Local Government. Where it is necessary to secure a scientist from outside India, the most satisfactory way of securing prompt results is to offer a salary sufficient to attract a man who has already established a reputation as a successful investigator.

V.—General Conclusions.

The general conclusions of the Indian Central Cotton Committee on the above report are :—

(1) The Committee's existing research schemes are on right lines.

(2) For the next five years by adopting a definite financial programme, the Committee can increase their expenditure on agricultural research by about Rs. 2 lakhs per annum.

(3) It must be definitely understood, however, that the Committee can commit themselves to an annual expenditure of, say, Rs. 7½ lakhs per annum for a period of five years only from March 1926. After that they will have to either curtail their programme or secure an amendment of the Cotton Cess Act, raising the amount of the cess. Their opinion is that if the Committee could come forward after seven years of sound work and show, not only that unless the cess were raised research work would have to be curtailed but that results of real importance had been achieved there should be no difficulty in securing increased funds.

(4) The amount of research work on cotton which requires doing is enormous, and it is quite impossible for the Committee to attempt to cover the whole field. In the selection of the problems to be financed from their grants, it is essential that the Committee so frame their programme that there will be no encouragement to provincial agricultural departments and provincial Governments to curtail or postpone the extension of their own work.

(5) The organisation which the Committee have adopted is adequate to deal with as many investigations as they can afford to finance. The Committee's future programme must take into consideration the possibility of developing existing schemes; this particularly applies to the two central research institutes.

(6) Any increase in expenditure on agricultural research which the Committee undertake during the next few years, should be largely devoted to the provision of a larger number of qualified scientific workers.

APPENDIX.

The Improvement of the Cotton Crop by G. R. Hilson.

This article embodies a survey, in some detail, of the problem of the improvement in yield and quality of the cotton crop. This survey was prepared with special reference to conditions in India but as in its broader aspects it is of more general application it may be of interest to others outside that country.

Analysis of the Problem.

Beginning at the point in which the grower is most interested and which it is the final aim of research work to influence favourably, *viz.*, the value of the crop per acre, and working backwards the following analysis of the problem is arrived at.

Value of crop.—The value of the crop per acre depends upon the yield per acre and the price which in the main depends upon the quality of the produce (lint).

Yield per acre.—This depends upon the number of plants per acre and the yield per plant. Each of these factors in turn depends upon the interplay of hereditary characters and environmental factors.

Quality.—The quality of the produce similarly depends upon the interplay of hereditary characters and environmental factors.

II. *Hereditary Characters* (1).—Those which affect the yield per plant are: (*a*) The number of bolls per plant. (*b*) The number of loculi per boll. (*c*) The number of seeds per loculus. (*d*) The weight per seed. (*e*) The weight of lint per seed.

(*a*) The number of bolls per plant depends upon the habit of the plant, the length of term and the vigour of the plant.

The habit of the plant.—Under this head are included, the height of the plant, the number of vegetative branches developed from the axillary buds on the main stem and from the accessory buds if such develop, the number of fruiting branches borne on the main stem and on the vegetative branches, the number of nodes on the fruiting branches, the length of the internodes, the angle at which the branches are carried in relation to the main stem and the toughness of the wood. The last three characters affect the ability of the plant to carry its crop to harvest without breaking down before the bolls mature and burst. The others determine the number of flower buds produced.

The length of term.—This is affected by the habit of the plant (a plant which produces its first flowering branch low down the main stem will flower earlier than one which does so high up the stem) but also depends upon the rate of growth of the main stem, the vegetative branches and the fruiting branches; the interval between the appearance of the bud and the opening of the flower and the interval between the opening of the flower and the bursting of the boll.

The vigour of the plant.—By this general term may be described the constitutional ability of the plant to withstand excess or defect of moisture, to resist the attack of pests and diseases and to mature a high proportion of bolls to buds produced. In this connection the rooting system of the plant and the development of the anthers are probably factors of importance. The presence or absence of hairs on the leaves is certainly of importance in relation to the attack of the Jassid (*Empoasca devstans*).

(*c*) *The number of seeds per loculus.*—This is affected by the number of loculi per boll and may depend on the number of ovules per loculus and on the size of the loculus.

(*d*) The weight of lint per seed. This depends upon the number of hairs per seed and the weight per hair. The latter depends upon the length, cross-section and specific gravity, characters of importance affecting the quality of the lint.

(2) Characters which affect the number of plants per acre are :—

The habit of the plant, which determines the amount of space required by the plant in order to develop fully ; length of term, which affects the amount of space desirable to allow the plant under given conditions ; and vigour, which affects the ability of the plant to survive.

(3) *Characters which affect the quality of the lint.*—The most important of these from the point of view of the producer of raw cotton are :—Length, strength, fineness, colour, lustre, and uniformity in each of these. The other characters such as porosity, extensibility, etc., are not such as are simple of determination and are better dealt with in a technological laboratory.

(4) *Other characters.*—Besides the above-mentioned characters there are others, such as the colour and the size of the flower, the size and shape of the leaf, the presence or absence of nectaries, etc., which may or may not have any connection with the yield of the plant or the quality of the lint, but which are useful identification marks and enable workers to judge easily whether mixture is taking place either in the breeding plots or in the cultivators' fields.

III. *Environmental Factors.*—These affect the yield per plant, the number of plants per acre and the quality of the lint. They are :—

(*a*) Climatic conditions.
(*b*) Pests.
(*c*) Diseases.
(*d*) Water.
(*e*) Soil.
(*f*) Manure;
(*g*) Methods of cultivation.

(*a*) *Climatic conditions.*—Under this head are included rainfall, temperature, humidity, sunshine, cloud and wind.

(*b*) *Pests.*—The chief pests are :—The pink and the spotted boll worms, the stem-weevil, the stem-borer, Jassids, aphis, the dusky and the red cotton bugs and certain other sucking insects which are probably instrumental in spreading fungoid and bacterial diseases.

(*c*) *Diseases.*—These are fungoid, *e.g.*, wilt (*Rhizoctonia*), bacterial, *e.g.*, black-arm (*B. Malvacearum*) and physiological, *e.g.*, red leaf disease.

(*d*) *Water.*—The effect of irrigation on a cotton crop, depends on the amount of water given, the time and method of application and on the composition of the water.

(*e*) *Soil.*—The fertility of a soil depends on its texture, depth and composition, which last term covers the whole soil complex, organic and inorganic ingredients and living organisms.

(*f*) *Manure.*—The effect of manure on a cotton crop depends on the kind and quantity applied and on the time and method of application.

(*g*) *Methods of cultivation.*—Under this term are included the various methods of preparing the land for the crop, sowing the seed, cultivating the crop after the seed has germinated and the various rotations of which the cotton crop forms a constituent.

From the foregoing, it is evident, that a complete scheme of agricultural research, aiming at the improvement of the cotton crop in regard to yield and quality of produce may be divided into two main divisions. In the one will be included matters concerning the heritable characters of the plant and their mode of inheritance and in the other matters concerned with the environment.

Before proceeding to discuss in detail these two divisions, it is well to draw attention to two important considerations. First, in the case of the heritable characters, while their expression in the plant is affected by the environment and while as characters they cannot be altered by human agency yet they can be manipulated and made to combine in a manner which will result in some degree in the improvement aimed at. Secondly, in the case of the environment, though some of the factors are within human control and can be varied so as to bring about the desired improvement, others are not. In their case, however, a knowledge of the effect of variations in them is of importance in estimating the effect of variations made in those under control. This knowledge is also necessary to prepare a forecast of the time at which a crop will come to harvest, the yield it is likely to give and the quality of the produce which will be marketed. The more exact this information is the more likely is the forecast to be correct.

Turning now to the consideration of these two main divisions, heredity and environment, matters concerned with the former will be taken first.

IV. *Heredity.*—In a study of the inheritance of the cotton plant, there are three processes to be gone through :—

1) The recognition of the heritable characters and their definition or method of measurement.

(2) The isolation of pure strains in which the heritable characters are combined in various ways.

(3) The manipulation of these characters by crossing strains with the object of forming new combinations of characters and the study of the results obtained.

Items (1) and (2) are generally carried out simultaneously and together form the foundation of all plant breeding work on cotton. Item (3) is carried out by making crosses between strains of the same or of different species, and applying ordinary plant-breeding methods.

The more important heritable characters, having an obvious bearing on the economic position and upon which research should be first directed are :—

Lint.—Length, strength, fineness, colour, lustre, uniformity in each of these and weight per seed.

Seed.—Weight, size, presence or absence of fuzz, number per loculus.

Boll.—Number of loculi, size, shape, manner of opening.

Leaf.—Presence or absence of hairs.

Plant.—Habit, length of term, vigour.

Other characters such as colour of flower, type of leaf, presence or absence of nectaries, colour of the fuzz on the seed, etc., are in the light of present knowledge of less importance. Many of them can be studied while dealing with the other more important characters.

The chief defects from which Indian cotton suffers are that the staple is short, the average yield per acre is low and there is frequently too high a percentage of leaf present in the sample. A considerable improvement in the last-named detail could be brought about if the size of the boll were increased and the sectors of the capsule opened more widely. Work in the inheritance of characters should therefore aim at the removal of these defects.

V. *Environment. Climatic conditions.*—It is well known to everyone who has experience of cotton, that variations in climatic conditions have an enormous influence on the yield and quality of the cotton crop. As an extreme example it may be quoted that Cambodia cotton grown under fair conditions in South India will grow to a height of four to five feet and will give a yield of 1,000 lbs. of seed cotton per acre, whereas if grown in North India, it tends to grow to a much greater height and give no yield.

This knowledge of the effect of season in the cotton crop exists, but it is too general and needs to be systematized. As a means of doing this it is suggested that the following scheme should be carried out each year for a number of years :—

(1) At each agricultural station in each important cotton tract, a plot of the particular pure strain of cotton evolved at and distributed from that station should be grown as far as possible on similar land and under similar cultural conditions.

(2) Throughout the year a daily record of rainfall, temperature, humidity, etc., should be maintained at each of these stations.

3) Throughout the growing season a daily record of flower-buds produced and shed, flowers opened, bolls shed and burst should be kept for a group of plants in each of the plots.

(4) A record of the treatment given to the plot and of any occurrence such as an attack of pest or disease should be maintained.

(5) The yield obtained from the plot should be recorded.

(6) A sample of the seed-cotton obtained should be sentto the Technological Laboratory for a detailed examination of the lint to be made and for a spinning test to be carried out.

By doing this an exceedingly valuable set of records could be obtained. After some years the information collected would make it possible to interpret more accurately the effect of seasonal variations in different parts of the same tract. As a result a more reliable forecast of the probable yield and quality of the cotton from that tract could be arrived at than is the case at present. Moreover, such information is very necessary if the results obtained from experimental work affecting other environmental conditions under human control are to be correctly interpreted. Also this information would be a distinct aid in calculating the chances of success of the introduction of a variety into a new tract.

Pests.—The problem of insect attack offers the following main lines of investigation :—

(1) Description and life-history of the pest.

(2) Habits of the pest, how it spreads and how it carries over from one crop to the next.

(3) The amount of damage caused.

(4) Means of control, by enemies, poisons or manipulation of the crop.

The description and life-histories of the more important of the insect pests of cotton in India are fairly well known. More detailed information in regard to items (2), (3) and (4) is needed, more particularly if local authorities are to be convinced of the need for legislative measures.

Except in the case of the Jassid, where the possession of hairs on its leaves affords to the plant a distinct measure of immunity from attack, breeding with the object of evolving resistant strains does not at present seem hopeful. It is, however, definitely known, in the Madras Presidency, that the stem-weevil and the spotted boll-worm and possibly the pink boll-worm show a decided preference for *Hirsutum* cottons as compared with the indigenous species. The reason for this is not known, but must lie in some constitutional difference between the two species as both are sown at the same time and are equally exposed to attack. This information if known would be a distinct aid to selection and breeding work aiming at the isolation of resistant strains.

Diseases.—Investigation of diseases follows similar lines to those indicated for pests.

Where the disease is definitely known to be due to an organism, the most hopeful solution of the problem appears to lie in plant breeding work aiming at the isolation of resistant strains.

Where the disease is known to be definitely physiological detailed investigation of the soil, the plant and the conditions of growth is necessary. It may also be possible to attack this problem by evolving strains which are not or are only slightly affected by the disease.

Water.—A certain amount of work on the use of water for the cotton crop has been done in India. Where, however, the crop has to depend mainly on the supply of irrigation water more information as to the quantity of water to be given per irrigation, the number of irrigations to be given in all and the interval which should elapse between successive irrigations is needed. This problem is, however, inextricably bound up with problems of soil, manure and methods of cultivation and has to be considered along with them.

Soil.—As yet only the fringe of the work lying waiting to be done on cotton soils in India has been touched. Broadly speaking the problem may be considered as falling under the four following heads :—

(1) Mechanical and chemical analysis.

(2) Fauna and flora.

(3) Physical properties.

(4) Climate.

It is not suggested that definite schemes should be formulated, having as their object the carrying out of wholesale surveys all over India along these four lines. Each may be approached through some definite problem the solution of which will yield results of economic importance.

For example under :—

(1) There are indications that there is a relation between the quantity of a lint and (*a*) its chemical composition and (*b*) the chemical composition of the soil on which the crop was grown. Further enquiry is needed to establish definitely the existence of this relationship. If the results confirm this point the fact will be of importance in devising manurial experiments and a step toward the solution of the problem of levelling up the quantity of the cotton of a tract to a fairly uniform condition will have been taken.

(2) The relationship between the soil organisms and the production of nitrates in the soil needs investigation. After soil moisture lack of nitrogen in the soil is the most important factor in limiting the yield of the cotton crop in India. Artificial manures to remedy this defect have either proved uneconomical or involve the possession of more capital than the average cultivator has at his disposal. Experimental work to discover cheap methods of increasing the efficiency of beneficial soil organisms is needed.

(3) The investigation of the physical properties of the soil should go hand in hand with the investigation of problems of plant growth and of cultural and irrigation problems.

(4) The examination of the soil climate is necessary in investigating problems of plant growth, *e.g.*, bud and boll-shedding. A knowledge of the relationship between the climate above ground and the soil climate, and the effect of variation in the latter on the plant would lead to a better understanding of the causes of variation in yield and quality of the crop, the first step in devising means of control.

Other problems will occur to other investigators and as the work proceeds. In time the whole field will be covered.

Manure.—A considerable amount of work on the kind and quantity of manure for the cotton crop has been done in India and some work on the time and method of application. Much work, however, remains to be done.

One of the outstanding manurial problems which has as yet not been solved is the economical manuring of black cotton. In certain parts on this soil an increase in the yield of the cotton crop by from 50 per cent. to 60 per cent. can be obtained by growing it after a leguminous crop. The introduction of this procedure in practice, however, cannot be recommended. If adopted the area under cotton and grain crops on the cultivator's holding would be reduced from one-half to one-third, and unfortunately the legume cannot always be depended upon to make up the loss on the grain crop. Along this line of attack the problem is bound up with the improvement of the other crops in the rotation. Some other solution may, however, be possible.

Methods of cultivation.—Much work has been already done in India on (*a*) preparatory cultivation, (*b*) methods of sowing, (*c*) spacing, (*d*) after-cultivation and some work has been done on rotations and mixed cropping as compared with pure cropping. There is, however, still work to be done along these lines.

A problem of some urgency is that of seed storage and the preparation of seed for sowing. Unaccountable failures of seed sometimes occur. The explanation for this may lie in—

(*a*) The condition of the seed when put into the store.
(*b*) The conditions of storage.
(*c*) The treatment given prior to sowing.
(*d*) Soil moisture conditions at the time of sowing.
(*e*) The seed itself.

The question is of importance in connection with the distribution of seed to cultivators.

VI. *Literature.*—Finally the subject of literature has to be mentioned. A fairly complete list of references to cotton literature in all its branches is to be found in the *Journal* of the Textile Institute. There is, however, a considerable amount of information on work done in India, scattered about in annual reports and other publications. Some of these reports are not referred to in the above-named journal and since the wave of retrenchment passed over India the distribution of these reports has been curtailed. Moreover, the information referred to is mixed up with other matter. It would be an advantage to workers in India if this material could be collected together and arranged in a more accessible form.

APPENDIX XII.

LIST OF SCIENTIFIC AND TECHNICAL OFFICERS PAID FROM THE INDIAN CENTRAL COTTON COMMITTEE'S RESEARCH GRANTS.

1.	Director, Technological Research Laboratory, Bombay.	Mr. A. James Turner, M.A. (Cantab., 1st Class in Tripos and in Part II), B.Sc. (London).	Recently Professor of Textile Physics, Manchester College of Technology.
2.	Spinning Master, Spinning Laboratory, Matunga (Bombay).	Mr. R. P. Richardson, London City and Guilds Full Honours Certificate.	—
3.	Senior Research Assistant (Chemist), Technological Laboratory, Matunga, Bombay.	Mr. D. L. Sen, M.Sc. Tech. (Manch.), M.Sc. (Bom.), A.I.C.	Recently Research student at the Indian Institute of Science and Manchester College of Technology.
4.	Junior Research Assistant (Microscopist), Technological Laboratory, Matunga, Bombay.	Mr. H. N. Dutt, M.B., B.Sc.	Recently Demonstrator in Botany, Gujerat College.
5.	Junior Research Assistant, Physicist ..	Mr. N. Hari Rao, M.Sc. (1st Class First), Calcutta University.	Indian Central Cotton Committee's Research Scholar (Textile Physics).
6.	Junior Research Assistant, Physicist ..	Mr. M. C. Bathija, B.A. (Hons.), Bombay, M.A. (Cantab., 2nd Class 1922, in Part I, Natural Science Tripos 3rd Class, in Part II)	—
7.	Statistical Assistant	Mr. V. Venkatraman, B.A. (Madras) 1923, 1st Class Honours in Maths.	Recently Statistical Assistant in Labour Office, Bombay.
8.	Senior Tester	Mr. K. Tarkundey, B.Sc. (Bombay) ..	Recently Fellow of Baroda College and Fellow of Royal Institute of Science, Bombay.
9.	Senior Tester	Mr. S. D. Bhave, B.A., B.Sc.	Fellow of the Royal Institute of Science, Bombay.
10.	Electrician	Mr. K. S. Venkatram, Government Technical Board Examination, 1921.	Bombay Electric Supply and Tram ways Co.
11.	Junior Tester	Mr. Y. M. Sathe, Inter Science (Bombay) ..	—
12.	Junior Tester	Mr. H. R. Nayak, Inter Science (Madras) ..	

LIST OF SCIENTIFIC AND TECHNICAL OFFICERS PAID FROM THE INDIAN CENTRAL COTTON COMMITTEE'S RESEARCH GRANTS—*contd.*

13.	Junior Tester	Mr. K. G. Deo, passed Examination in Arts, Bombay.	—
14.	Junior Tester	Mr. J. R. Desai, B.Sc.	—
15.	Junior Tester	Mr. G. D. Bhide	—
16.	Junior Tester	Mr. K. V. N. Nayar	—
17.	Junior Tester	Mr. H. B. S. Joshi	—
18.	Junior Tester	Mr. S. S. Sukhtankar, Licentiate, V. J. T. I. ..	—
19.	Junior Tester	Mr. K. S. Marar, B.A.	—
20.	Junior Tester	Mr. A. Krishnan	—
		BOMBAY RESEARCH SCHEMES.	
21.	Cotton Mycologist, Dharwar	Mr. G. S. Kulkarni, M.Ag. (Bombay) ..	Assistant Professor of Mycology, Poona Agricultural College—on deputation.
22.	Senior Assistant to the Cotton Mycologist.	Mr. B. B. Mundkur, M.A. (Madras), 1st Class Honours in Botany and Gold Medallist.	—
23.	Junior Graduate Assistant, Dharwar ..	Mr. R. K. Kulkarni, B.Ag., Bombay	—
24.	Junior Graduate Assistant, Dharwar ..	Mr. T. R. Khadilker, B.Ag., Bombay (with advanced Botany).	—
25.	Botanist in charge of Cotton Research Scheme No. 1—Physiology of the Cotton Plant in Gujerat.	Mr. K. V. Joshi, M.Ag. (Bombay)	On deputation from Bombay Department of Agriculture.
26.	Senior Research Assistant	Mr. B. M. Dabral, M.Sc. in Botany, 1st Class (Benares), Malaviya Gold Medallist.	—
27.	Junior Research Assistant	Mr. A. K. Shah, B.Ag. (Bombay)	—

LIST OF SCIENTIFIC AND TECHNICAL OFFICERS PAID FROM THE INDIAN CENTRAL COTTON COMMITTEE'S RESEARCH GRANTS—*contd.*

28.	Junior Research Assistant	Mr. N. M. Nitimargi, B.Ag. (Bombay) ..	—
29.	Cotton Entomologist, Spotted Bollworms Investigation.	Mr. Ramrao S. Kasargode, L.Ag., (Bombay).	Assistant Professor of Entomology, Agricultural College, Poona—on deputation.
30.	Research Assistant	Mr. B. P. Deshpande, B.Ag. (Bombay, 1st Class).	—
31.	Research Assistant	Mr. S. G. Kadkol, B.Ag. (Bombay) ..	—
		CENTRAL PROVINCES RESEARCH SCHEME.	
32.	Second Economic Botanist	Mr. D. N. Mahta, B.A., F.L.S.	—
33.	1st Assistant to Economic Botanist for Cotton, Central Provinces.	Mr. S. C. Roy, L.Ag., and Post Graduate, Pusa.	On deputation from Central Provinces Agricultural Department.
34.	2nd Assistant to Economic Botanist for Cotton, Central Provinces.	Mr. D. G. Sawargaonkar, L.Ag. (Hons.) ..	On deputation from Central Provinces Agricultural Department.
35	3rd Assistant to Economic Botanist for Cotton, Central Provinces.	Mr. D. L. Janoria, L.Ag. (Hons.)	On deputation from Central Provinces Agricultural Department.
36.	4th Assistant to Economic Botanist for Cotton, Central Provinces.	Mr. D. Y. Bhand, L.Ag. (Hons.)	On deputation from Central Provinces Agricultural Department.
37.	Senior Mycological Assistant	Mr. Jiwan Singh, M.Sc., 1923	Research Student, Indian Central Cotton Committee, 1923–25.
38.	Junior Mycological Assistant	Mr. M. P. Parthasarathy, B.A.	Recently Mysore Department of Agriculture.
		MADRAS HERBACEUM SCHEME.	
39.	Herbaceum Cotton Investigator ..	Mr. R. Chockalinga Pillai, L.Ag.	—
40.	Technical Assistant	Mr. S. N. Venkataraman, B.A., B.Sc. ..	—

LIST OF SCIENTIFIC AND TECHNICAL OFFICERS PAID FROM THE INDIAN CENTRAL COTTON COMMITTEE'S RESEARCH GRANTS—*contd.*

41.	Technical Assistant	Mr. P. Abraham, B.A. (Botany and Zoology) 1st Class.		—
42.	Technical Assistant	Mr. C. C. Chandy, B.A. (Biology), 2nd Class.		—
		INDORE SCHEME.		
43.	Director, Institute of Plant Industry, Indore.	Mr. A. Howard, C.I.E., M.A. (Cantab.)	..	Recently Imperial Economic Botanist.
44.	Physiological Botanist	Mrs. G. L. C. Howard, M.A. (Dublin)	..	Recently 2nd Imperial Economic Botanist.
45.	Assistant in charge of Field Experiments, Seed Farm.	Mr. K. R. Joshi, L.Ag. (Nagpūr) ..	..	Lent by Indore State Agricultural Department.
46.	Junior Assistant	Mr. Kuber Singh, L.Ag. (Bombay)		—
47.	Fieldman	Mr. Sumain Singh		—
48.	Fieldman	Mr. V. R. Sathe		—
		PUNJAB RESEARCH SCHEME.		
49.	Cotton Research Botanist	Mr. Trevor Trought, M.A. (Cantab.)	..	Recently Senior Botanist to the Ministry of Agriculture, Egypt.
50.	Technical Assistant	Chaudhri Mohd. Akbar, B.Sc.		—

APPENDIX XIII.

INDORE INSTITUTE OF PLANT INDUSTRY.

The programme of cotton investigations submitted to the Central Cotton Committee in 1923 is given below :—

The aim of the Indore Institute (as regards cotton investigations) is to provide a centre of research for the black soil tracts. At this centre any problems suggested, either by the Central Cotton Committee or by other workers in India, can be taken up. A special effort will be made to create a good library dealing with the various aspects of cotton production for the use not only of workers at the Institute itself but also of other investigators on cotton in India.

While the Institute will always be prepared to consider any useful suggestions as regards problems to be investigated, the following preliminary programme is put forward. This falls into four parts :—

(*a*) *Botanical Survey.*—Up to the present, little or no attempt has been made in India to isolate, classify and study the unit species which form the framework of the various species and varieties of cotton found on the black soils. It is true that the Indian cottons have been classified and surveyed from the point of view of systematic botany, but this is entirely inadequate for modern work as by this method cottons of very different agricultural value are not distinguished. The work needs to be carried much further and nothing short of the isolation and study of the unit species will meet the case. This work has a direct practical bearing. It will, in all probability, lead to the isolation of useful types for distribution. It will also provide material for the plant breeder and for critical work on the physiology and agronomy of cotton.

(*b*) *Plant Breeding.*—Two main practical problems will be taken up at once—

(1) the creation, establishment and maintenance of an island of long staple cotton on the Malwa plateau. The types isolated will be available for other areas in India and the crop will enable a grade of improved cotton to be established for the mills and for the shippers ;

(2) the improvement of the fibre of the hardy *Roseum* type which is, in all other respects, admirably suited for the low-lying areas of Central India.

In the solution of these questions the inheritance of characters will have to be studied. The results will apply not only locally but will also be of general interest.

(*c*) *The Physiology of the Cotton Crop.*—In order to increase production something more than improved varieties is needed. The new varieties must be provided with suitable conditions for growth. To discover these the physiology of the cotton plant must be studied and the factors which now limit production must be determined. This involves the study of root development, the relations of the root system to the soil type and the influence of factors such as soil moisture, soil aeration and drainage, soil texture and soil temperature on growth. Included in these studies is the discovery of factors which produce the shedding of buds, flowers and

bolls. During the course of these physiological studies, the general nutrition of the cotton plant will be considered and how far the yield can be improved by manuring and other methods of soil treatment.

(*d*) *The Influence of Environmental Factors on the Lint Characters.*—Modern industries demand a uniform product. Once this is obtained the purchase of raw material as well as the details of manufacture are simplified. In the case of cotton, any tract which can produce uniform lint will rapidly establish its reputation in the trade. It is well known, however, that the cotton fibre alters in character according to the soil on which it grows and to some extent according to the season. Further work is desirable on this matter with the object of discovering what factors bring about these changes, which varieties are most easily affected and whether any practical remedies exist for improving the uniformity of the fibre of the same cotton. This portion of the work is of direct bearing on the question of the maintenance of grades of cotton for the highest class of spinning in this country.

APPENDIX XIV.

LIST OF RESEARCH STUDENTS APPOINTED BY THE INDIAN CENTRAL COTTON COMMITTEE.

Name.	Age.	Degree.	University and years.	Other qualifications.	Where posted.
			TEXTILE PHYSICS.		
Hari Rao, N.	..	M.Sc. (1st Class), Physics, Calcutta University.	Central College, Bangalore, 1916–20; University College of Science, Calcutta, 1921–23.	—	Technological Laboratory, Matunga. (Since appointed Junior Research Assistant at Technological Laboratory.)
Kumana, Sorab Edulji ..	24	B.A. (2nd Class Hons.), 1922, B.Sc. (2nd Class), 1923.	1918–22, Bombay Elphinstone College. 1923 to date, Royal Institute of Science, Bombay, for M.Sc.	Research work in Physical Chemistry on boric and arsenic acids—the behaviour of their mixtures and the equilibrium, if any, existing between their ions in solution.	Technological Laboratory, Matunga.
Sen, Kamakhya Ranjan ..	22	B.Sc. (Hons.) 1st Class, 1924. Physics, Chemistry.	1921–24, Dacca University, (Jagannath College, Dacca, 1919–21).	—	Technological Laboratory, Matunga.
Roy, Prafulla Kumar ..	25	B.Sc. 1920. M.Sc., 1922. B.T., 1923.	1920–21, Calcutta (Dacca Government College). 1921–22 (University College of Science, Calcutta). 1923 (Dacca Training College).	Research work on "the Diurnal variation of Natural Ionisation."	Technological Laboratory, Matunga. (Since resigned).
Rao, Lakshmi Narayana ..	26	B.Sc. (1st Class), 1921. M. Sc. (1st Class), Botany, 1924.	1917–21, Mysore (Central College). 1921–24, Calcutta University.	Research work on Plant Physiology and Histology Experience in Microtechnic, etc.	Technological Laboratory, Matunga.

ESEARCH STUDENTS APPOINTED BY THE INDIAN CENTRAL COTTON COMMITTEE—*contd.*

Name.	Age.	Degree.	University and years.	Other qualifications.	Where posted.
			BOTANY.		
Banerji, I.	25	M. Sc. Botany (1st Class), 1922. Honours in Botany at B.Sc., 1920.	Calcutta, 1915–1922 (Presidency College).	Research Student, Botanical Section, Pusa, 1922 to date.	Coimbatore.
Desai, B. B.	23	B. Ag. (2nd Class), 1922. (1st Class Honours at Junior B. Ag. Examination), specialised cotton.	Bombay Agricultural College, Poona, 1919-22.	Worked at cotton breeding under Mr. Patel, Surat.	Dharwar.
Pande, Sheo Shanker ..	25	M. Sc. Botany, 1923. B. Sc. Biology group, 1921.	Punjab Government College, 1921–23, Allahabad. Agra College, 1917–21.	Published Thesis on *Marsilia erosa* for M.Sc.	Nagpur.
Mohammed Afzal	21	B. Sc. (Agri.), 1923, Gold Medal.	Punjab Agricultural College, 1919–23.	—	Lyallpur.
Datta, Atul Chandra ..	25	M. Sc. (1st Class) Botany, and top of the list in 1st Class Hons. at B.Sc., 1920.	Calcutta Presidency College to 1920. University Science College, 1920–22.	Research student under Dr. Bruhl. Joint author, papers on plant diseases (*Miliola*) and on Water Hyacinth.	Coimbatore.
Singh, Sant Bahadur ..	23	B.Sc. (2nd Class), Botany, 1921.	Allahabad, Benares 1922–24. (St. John's College, Agra, 1917-21.)	Research work in Plant Physiology on growth of cotton plant. Joint paper with Prof. Inamdar on this subject for Science Congress.	Surat. (Since resigned.)
Ali Akbar	20	B.Sc. April, 1922, and Post-graduate course.	1919 to date, Punjab (Agricultural College, Lyallpur).	Research work on Plant-Physiology. Transpiration in Maize.	Lyallpur.

LIST OF RESEARCH STUDENTS APPOINTED BY THE INDIAN CENTRAL COTTON COMMITTEE—*contd.*

Name.	Age.	Degree.	University and years.	Other qualifications.	Where posted.
			ENTOMOLOGY.		
Bindra, Sohan Singh ..	24	M.Sc., 1923, in Zoology by research. Honours in Zoology at B.Sc., 1922.	Punjab Government College, Lahore, 1917–23.	Published two papers on research done.	Lyallpur.
Nangpal, Harbhagwandas. .	22	B.Sc. (Hons.) Zoology, 1923.	Punjab, 1917-23; Government College, Lahore.	Research on Metamorphosis of Wasp.	Cawnpore.
Singh, Vishva Ram ..	23	L.Ag., 1924	1920–24 (Agri. College, Cawnpore).	Research work on Pink Bollworm.	Cawnpore.
Trehan, Kedar Nath ..	25	B.Sc. Botany and Zoology, 1919. M.Sc., 1921.	1915–19, Punjab (Gordon College, Rawalpindi). 1919–21, Punjab (Government College, Lahore).	Research work on Snakes, Thrips, etc.	Lyallpur.
			MYCOLOGY.		
Jiwan Singh	22	M.Sc., 1923 in Botany ..	Punjab Khalsa College, 1919–21, Government College, Lahore, 1921-23.	Some Research work during M.Sc. (two years course).	Nagpur.
Ranadive, Jagannath Dattatraya.	29	B.Ag., 1921	1914–23 Bombay (Agricultural College, Poona).	Joint Bulletin with Prof. Ajreker on Potato diseases. Research in Mycology.	Dharwar.

APPENDIX XV.

PROGRESS IN THE INTRODUCTION OF IMPROVED VARIETIES OF COTTON IN VARIOUS PROVINCES.

Bombay—(1) *Gujerat.*—The policy of the Agricultural Department is to establish one variety of cotton throughout the whole of the area south of the Narbada. In this policy they are receiving the cordial support of the Baroda and Rajpipla States. The area south of the Tapti is now reported to be practically free from short-stapled varieties. North of the Tapti the Rajpipla State grows the same selected variety (1027 A.L.F.) as has been distributed in Surat. Considerable progress has also been made around Ankleshwar in replacing the old mixture by this valuable pure strain. The 1027 variety is now recognised by the trade as " Surat farm cotton " and as such fetches a considerable premium. Unfortunately, a shorter stapled variety is still grown in the Olpad Taluka which is not only inferior to " 1027 " in regard to staple but is impure and contains a considerable amount of Goghari. Unfortunately, the Co-operative Cotton Sale Societies in this taluka still persist in the distribution of seed of an inferior type which is temporarily popular because of its higher ginning percentage.

For the Broach tract, north of the Narbada, a pure type of superior staple intended to replace the present mixture is being tested on the Broach farm and preliminary arrangements for seed multiplication are now in hand. For the Dholleras tract four pure strains of Wagad cotton are now being multiplied on the cotton breeding station at Viramgaon and are also being tested on 150 acres under cultivators' conditions. In South Gujerat the seed multiplication organisation of previous years has been maintained. Private seed farms under departmental supervision aggregated to 11,500 acres from which over two million pounds of seed has been obtained for issue representing close on a quarter of a million acres. Only by the continued supply of controlled seed of known purity in this way can the whole of the cotton of the tract be brought up to the standard aimed at.

(2) *Southern Division.*—The systematic introduction of the improved varieties of Kumpta and Upland cottons, known as Dharwar No. 1 and Gadag No. 1, respectively, was continued. The areas under seed of known purity had been 90,000 and 95,000 acres respectively. Seed distribution was carried out in co-operation with the Co-operative Cotton Sale Societies of Hubli, Gadag and Bijapur and it is estimated that merchants supplied seed of high purity for approximately an equal area. The Cotton Sale Societies continued their periodical auction sales of improved types of cotton, grading being done by the cotton staff of the Agricultural Department. The kapas brought for sale by the societies represented some 30 per cent. of the produce of the seed issued. The extra price to the growers was estimated at Rs. 3,30,000. Private seed farms for the two varieties supervised by the Department occupied slightly over 7,000 acres, the seed issued for the current season being sufficient for approximately 202,000 acres.

The Cotton Transport Act has worked very satisfactorily in the Division by preventing the import of inferior cottons such as Bengals, Irani, and mill waste for mixing purposes. Complaints of the mixing of improved Upland with ordinary Dharwar-American continued to be received, but these should disappear automatically.

(3) *Khandesh.*—The general distribution of pure *Roseum* cotton seed has been continued through registered seed growers, Seed Unions and Agricultural Associations. The Agricultural Department supplies seed for over 2,000 acres each year and arranges for the roguing of the fields and supervises the seed supply.

Experimental work, however, is directed to the obtaining of a type of cotton of superior staple and suitable to local conditions. Several such strains show promise and trials on a field scale are being conducted during the present season.

Punjab.—There has been a further marked expansion in the area under Punjab-American cotton. The principal variety is still 4F (which was first given out in 1923), the area in 1924-25 being 1,036,000 acres. A later selection, 285F (first given out in 1921), which is earlier ripening, hardier and with a superior staple, was grown on 10,000 acres in 1924-25. A third selection (289F) is at present under trial by some of the larger growers in the canal colonies, the area being about 2,000 acres. This variety is a little later ripening than others, but has a better lint and is a heavier cropper. Punjab cotton cultivators are now fully alive to the advantages of American cotton; in fact, if anything, the tendency is to grow Punjab-American even when the land may hardly be suitable and irrigation supplies hardly adequate.

Work for the improvement of indigenous varieties has been continued. The "Mollisoni" variety, an improved strain of *indicum*, is being grown on 31,000 acres, whilst in the south-east of the province, where due to lack of irrigation facilities American cotton cannot be grown, about 57,000 acres are under a selected strain of *Roseum*.

United Provinces.—Attention has been concentrated on the extension of selected indigenous varieties. The selection known as A-19, a high ginning type with a staple better than the Aligarh White Flower type, is being introduced in the Western (Aligarh) Circle, and 5,000 acres have been put under controlled cultivation for seed supply during the present season with the object of securing a pure seed supply for 50,000 acres in the following year.

In the Bundelkhand Division and the Cawnpore District the selection known as J.N. 1 is spreading, and compact areas of this variety within easy reach of the Cawnpore market are increasing. An area of over 2,000 acres is at present under this variety and the organisation of the seed supply is receiving attention.

Selections made during the cotton survey and hybrids produced by the Economic Botanist are being established in parts of the Rohilkhand Division where a compact area suitable for the production of these varieties exists. It is reported that the impossibility of finding sufficient irrigation for the Cawnpore-American type will prevent any further extension of the areas under this cotton in the United Provinces.

Burma.—Several improved strains are now under trial on a field scale. The area under improved Wagale increased by 1,474 acres and the area under Burma Cambodia increased to 3,087 acres of which 2,787 acres was in the Sagaing District and 300 acres in the Thayetmyo District.

Hyderabad State.—The Department of Agriculture has steadily followed the policy of encouraging the production of pure Bani (Hyderabad Gaorani) and of eliminating the short-stapled Khandesh variety. It is estimated that 600,000 bales of Bani was produced during the year under report of which 350,000 bales was produced by the two districts of Nanded and Parbhani in which now practically only this variety is grown ; 15,000 bales of pure Bani was also produced in the Bir District in the year 1924-25.

Baroda State.—The important cotton-growing areas of the Baroda State are much interlaced with those dealt with by the Bombay Department of Agriculture in the course of its operations in Surat, and the policy of previous years, *viz.*, to co-operate with the Bombay Department in the introduction of the 1027 type has been steadily followed. 361,800 lbs. of pure seed was issued and it is estimated that 42,000 acres have been sown with pure seed of this variety.

Rajpipla State.—In co-operation with the Bombay Department of Agriculture, this State has for some years systematically introduced the 1027 improved variety of Surat cotton for the replacement of existing mixtures and the process is now nearly complete with the result that the quality and reputation of the Rajpipla cotton have greatly improved and it is now recognised as equal to the best Surat and is much sought after.

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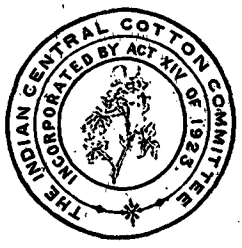

ANNUAL REPORT

OF THE

Indian Central Cotton Committee,

BOMBAY,

1926.

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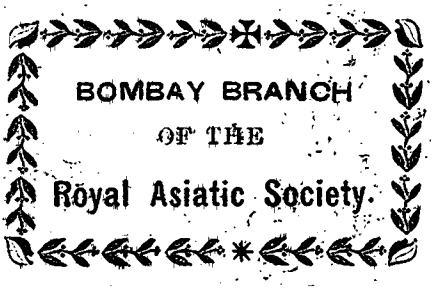
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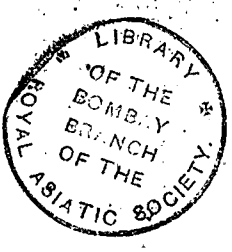

CONTENTS.

	Page
Personnel	1
Sub-Committees	6
Staff	11
The work of the year	12
Cotton Transport Act	12
Regulation of Gins and Presses	16
Cotton Statistics	21
Finance of the Cotton Crop	23
Open Cotton Markets	29
Marketing of Improved Varieties of Cotton	29
Spinning Tests	30
The Liverpool Empire Futures Cotton Contract	32
Measures to prevent the introduction of the Mexican Boll Weevil	33
Royal Commission on Agriculture	36
RESEARCH :—	
Technological Research Laboratory	36
Indore Institute of Plant Industry	37
Research Grants	38
Research Students	43
Secretary's Tours	43
Collection and Supply of Information	43
Publications	44
Annual Report of the Director, Technological Laboratory	45

APPENDICES.

I.	Bombay Notification under the Cotton Transport Act	58
II.	Opinions of Millowners regarding working of the Cotton Transport Act	58
III.	Madras Notification under the Cotton Transport Act	59
IV.	Press Marks prescribed for the different Provinces and Indian States	61
V.	Summary of the Reports on the Khandesh, Berar and North Gujerat Investigations	63
VI.	Spinning Tests on Indian Cottons	136
VII.	Annual Report of the Director, Indore Institute of Plant Industry.	143

Page.

VIII. Programme of future work of the Indore Institute of Plant Industry 153

IX. Technical Note on the Various Provincial Research Schemes .. 155

X. List of Research Students 162

XI. Progress in the Introduction of Improved Varieties of Cotton in Various Provinces 164

ANNUAL REPORT OF THE INDIAN CENTRAL COTTON COMMITTEE, BOMBAY, FOR THE YEAR 1926.

THE Central Cotton Committee was constituted by Resolution No. 404-22, dated the 31st of March 1921, of the Government of India in the Department of Revenue and Agriculture and was originally an Advisory Committee. With the passing of the Cotton Cess Act the Committee was permanently incorporated and provided with funds of its own for the promotion of research for the improvement of cotton growing. The Committee's activities, therefore, fall into two main groups. In the first place it continues to advise the Government of India and Local Governments on matters connected with the improvement of cotton growing and cotton marketing—particularly on measures designed to prevent abuses and malpractices. In this capacity the Committee not only deals with such references as are made to it by Government, but continues to take the initiative in bringing to the notice of Government matters which require attention.

2. Apart from its more formal activities the value of the Committee as a common meeting ground for all sections of the cotton industry is steadily becoming more apparent. In the administration of the cotton cess funds the Committee provides for research for the benefit of cotton-growing in India as a whole, and this aspect of its work is steadily becoming more important.

PERSONNEL.

3. Under Rule 3 of the Indian Cotton Cess Rules, members of the Committee hold office for three years and one-third of the

members retire each year in rotation. The membership for 1926 was as follows :—

1. PRESIDENT.—Dr. D. Clouston, C.I.E., Agricultural Adviser, to the Government of India, *ex-officio*.

2. REPRESENTATIVES OF AGRICULTURAL DEPARTMENTS.

Madras	Mr. R. D. Anstead, C.I.E., Director of Agriculture.
Bombay	Dr. H. H. Mann, Director of Agriculture.
United Provinces ..	Mr. G. Clarke, C.I.E., Director of Agriculture.
	(Dr. A. E. Parr, from 16th June 1926 to 4th January 1927.)
Punjab	Mr. D. Milne, C.I.E., Director of Agriculture.
Central Provinces ..	Mr. F. J. Plymen, Director of Agriculture.
	(Mr. R. G. Allan, from 16th June 1926 to 21st December 1926.)
Burma	Mr. H. F. Robertson, Deputy Director of Agriculture.

3. THE DIRECTOR-GENERAL OF COMMERCIAL INTELLIGENCE AND STATISTICS, *ex-officio*.

4. REPRESENTATIVES OF CHAMBERS OF COMMERCE AND ASSOCIATIONS.

The East India Cotton Association	Mr. W. Ellis Jones, M.L.C.

The Bombay Millowners' Association	Mr. J. A. Kay,* M.L.C. (*Vice-President*). (Succeeded by Mr. S. D. Saklatvala from March).
The Bombay Chamber of Commerce ..	Mr. V. A. Grantham, M.L.C. (Succeeded by Mr. J. A. Kay from March).
The Indian Merchants' Chamber, Bombay..	Sir Purshotamdas Thakurdas, Kt., C.I.E., M.B.E., M.L.A. (Mr. Lalji Naranji, M.L.C., from December 3rd, 1925, to September 26th, 1926).
Karachi Chamber of Commerce	Mr. G. C. R. Coleridge.
Ahmedabad Millowners' Association	Seth Kasturbhai Lalbhai, M.L.A.
Tuticorin Chamber of Commerce	Mr. G. Z. Meli. (Mr. H. T. Cartwright from May 17th to December 10th, 1926).
Upper India Chamber of Commerce ..	Mr. Bertram West.
The Empire Cotton Growing Corporation.	Mr. W. Roberts.

5 & 6. COMMERCIAL REPRESENTATIVES NOMINATED BY LOCAL GOVERNMENTS.

Central Provinces ..	Mr. S. B. Mehta, C.I.E. Rai Bahadur K. S. Nayudu, M.L.C.
Madras	Mr. H. F. P. Hearson.

* Now Sir Joseph A. Kay, Kt.

Punjab	Rai Bahadur Seth Prabhu Dayal, M.B.E.
Bengal..	Mr. B. K. Lahiri.

7. Co-operative Representative—Mr. B. F. Madon.

8. Representatives of Cotton Growers.

Madras	M. R. Ry. R. Appaswamy Naidu Garu.
	M. R. Ry. B. P. Sesha Reddi Garu.
Bombay	Rao Bahadur Bhimbhai Ranchodji Naik, M.L.C.(Surat).
	Bakhshi Darshan Singh (Sind).
United Provinces ..	Kunwar Bikram Singh of Pisawah, M.L.C.
	Rai Saheb M.Amba Prasad,M.L.C.
Punjab	Mr.. H. T. Conville.
	Sardar Ujjal Singh, M.A.
Central Provinces and Berar	Rao Saheb V. G. Kulkarni, M.L.C.
	Mr. N. V. Deshmukh.

9, 10 & 11. Representatives of Indian States.

Hyderabad State ..	Mr. Mazhar Hussain, Director of Agriculture.
Baroda State ..	Mr. Manilal B. Nanavati, Director of Commerce and Industries.
Gwalior State ..	Mr. Hiralal H. Pandya, Administrative Officer, Department of Agriculture.
Rajputana and Central India States.	Mr. A. Howard, C.I.E., Director of the Institute of Plant Industry, Indore.

ADDITIONAL MEMBERS NOMINATED BY THE GOVERNOR-GENERAL IN COUNCIL.

1. Dr. W. Youngman, Economic Botanist for Cotton, Central Provinces.
2. Mr. G. H. Krumbiegel, Representative of the Mysore State.
3. Mr. G. R. Hilson, Cotton Specialist, Madras.
4. Mr. K. G. Reshimwale, Representative of the Indore State.
5. Rao Saheb Bhimbhai M. Desai, Deputy Director of Agriculture, Gujerat, Surat.

SECRETARY (appointed by the Government of India) Mr. B. C. Burt, B.Sc., M.B.E., I.A.S.

DEPUTY SECRETARY—Mr. W. J. Jenkins, M.A., B.Sc., I.A.S.

4. There were several changes in the membership of the Committee during the year. Mr. V. A. Grantham, representative of the Bombay Chamber of Commerce on the Committee since its inception in 1921 and the first Vice-President retired in March 1926 on leaving India. He was succeeded by Mr. (now Sir Joseph) Kay whose place as representative of the Bombay Millowners' Association was taken by Mr. S. D. Saklatvala, another past President of the Millowners' Association, who had served on the Committee in 1924.

5. During Dr. Clouston's absence on special duty as Liaison Officer with the Royal Commission on Agriculture, Dr. W. H. Harrison, Officiating Agricultural Adviser, acted as President of the Committee.

6. Mr. (now Sir Joseph) Kay was unanimously re-appointed Vice-President of the Committee for the year 1926-27.

Sub-Committees.

7. The following members were appointed to form the *Standing Finance Sub-Committee* required by the Indian Cotton Cess Rules :—

Mr. J. A. Kay, M.L.C., Vice-President and Chairman, (*ex-officio*).

Sir Purshotamdas Thakurdas, Kt., C.I.E., M.B.E., M.L.A.

Mr. B. F. Madon. (Succeeded by Seth Kasturbhai Lalbhai).

Rao Bahadur Bhimbhai Ranchodji Naik.

Mr. W. Ellis Jones.

Mr. G. C. R. Coleridge.

Dr. H. H. Mann.

Mr. V. A. Grantham, M.L.C. (Succeeded by Mr. S. D. Saklatvala).

The Standing Finance Sub-Committee held thirteen meetings during the year.

8. *The Local Sub-Committee* during the year consisted of the following members :—

Mr. J. A. Kay (*Vice-President*),

Mr. V. A. Grantham, (until March),

Mr. S. D. Saklatvala,

Mr. W. Ellis Jones,

Sir Purshotamdas Thakurdas,

Mr. G. C. R. Coleridge,

Seth Kasturbhai Lalbhai,

Mr. G. Z. Meli,

Rao Bahadur Bhimbhai Ranchodji Naik,

Dr. H. H. Mann, and

Mr. Manilal B. Nanavati.

The object of this Sub-Committee, which includes all members of the Central Cotton Committee living in or near Bombay, is to deal with matters of general importance in the interim between meetings of the full Committee; to the meetings all members of the Central Committee who may be visiting Bombay are invited. This Sub-Committee has again performed most valuable work not only in dealing with various references from Government which required prompt attention but in the detailed examination of many matters dealt with by the Central Committee to which the Local Sub-Committee reports.

9. The appointment of a Special Sub-Committee to deal with matters arising out of the Cotton Ginning and Pressing Factories Act has relieved the Local Sub-Committee of a certain amount of work, nevertheless it has been fully occupied with the details of the various matters of importance which have come before the Committee. This Sub-Committee held five meetings during the year.

Cotton Ginning and Pressing Factories Sub-Committee.

10. The Committee was appointed on July 6th, 1925, for the purposes of Section 2 (*f*) of the Cotton Ginning and Pressing Factories Act. The membership for 1926 was as follows:—

(1) The Vice-President, Chairman (*ex-officio*), Mr. J. A. Kay.

(2) Five members representing the cotton trade who are residents of the Bombay Presidency:—

Mr. V. A. Grantham (succeeded by Mr. S. D. Saklatvala)

Sir Purshotamdas Thakurdas,

Mr. W. Ellis Jones,

Mr. G. Z. Meli, and

Mr. G. C. R. Coleridge.

(3) Four up-country members :—

Madras—Mr. H. F. P. Hearson.
United Provinces—Mr. Bertram West.
Punjab—Rai Bahadur Seth Prabhu Dayal.
Central Provinces and Berar .. .. Mr. S. B. Mehta.

(4) The Co-operative Representative—Mr. B. F. Madon.

The Sub-Committee dealt with a number of questions in regard to the working of the Act to which reference is made in a later section of the report ; seven meetings of the Sub-Committee were held during the year.

Special Standing Sub-Committee on the Finance of the Cotton Crop Up-country.

11. The members of this Sub-Committee for the year were :—

Mr. J. A. Kay, Vice-President and Chairman, (*ex-officio*).
Dr. H. H. Mann.
Mr. W. Ellis Jones, and
Mr. B. F. Madon.

The Sub-Committee held three meetings, framed the questionnaire and instructions to investigators for the village investigations and considered the detailed results reported.

Agricultural Research Sub-Committee.

12. This Sub-Committee meets in conjunction with meetings of the full Committee and examines research proposals, the progress reports on research schemes and the reports of research students. The Committee for 1926 consisted of the following members :—

Dr. D. Clouston (*President*),
Mr. J. A. Kay, (*Vice-President*),
Mr. A. Howard (Director of the Institute of Plant Industry, Indore),

Mr. B. F. Madon (Co-operative Representative),

Sir Purshotamdas Thakurdas, Kt., (Cotton Trade Representative),

Mr. H. T. Conville (Cotton Growers' Representative),

Dr. H. H. Mann,
Mr. D. Milne,
Dr. W. Youngman,
Mr. R. D. Anstead,
} Representatives of Agricultural Departments.

Mr. G. R. Hilson,
Mr. Trevor Trought,
} Co-opted members.

and

The Secretary.

Technological Research Sub-Committee.

13. This Sub-Committee meets in connection with meetings of the Central Committee, and also at other times when necessary, to discuss matters arising out of the Committee's arrangements, for technological research and to advise the Central Cotton Committee and the Director of the Laboratory on the management and development of the Committee's Technological Research Laboratory. The Sub-Committee for 1926 consisted of the following members :—

The *Vice-President* (Mr. J. A. Kay).

Mr. S. B. Mehta.

Dr. H. H. Mann.

Mr. D. Milne.

Mr. Bertram West.

Mr. A. Howard.

Seth Kasturbhai Lalbhai.

The *Secretary*, and the *Director*, Technological Research Laboratory.

Selection Sub-Committees.

14. Selection Sub-Committees as required by the Indian Cotton Cess Rules were appointed from time to time to deal with appointments on the staff of the Committee.

The *Research Students' Selection Sub-Committee* met as usual in January.

15. As is only natural for a body of 42 members, much of the detailed work of the Committee was carried out through the medium of the Sub-Committees referred to above. To the gentlemen who served on these sub-committees and, in particular, to those members of the commercial community in Bombay, who again have given so freely of their time to the furtherance of the Committee's work, much of the success which has attended the Committee's labours is due.

MEETINGS.

16. The Central Cotton Committee met twice during the year, *viz.*, on January 11th to 14th and July 5th to 7th and, as will be seen from the summary of the proceedings which follows, a good deal of useful work was done. At the July meeting, owing to the President's absence on special duty connected with the Royal Commission on Agriculture, Dr. W. H. Harrison, Officiating Agricultural Advisor to the Government of India, presided. The Committee has recently been able to secure an addition to their premises which enables all meetings of the Committee and of Sub-Committees once more to be held in its own rooms. The January meeting was held in the Committee room of the Bombay Secretariat again kindly placed at our disposal by the Government of Bombay.

STAFF.

17. With the approval of the Government of India Mr. W. J. Jenkins, I.A.S. (previously Deputy Director of Agriculture, North Central Division, Bombay Presidency), was appointed Deputy Secretary to the Committee from May 27th, 1926.

Mr. Burt went on short leave from July 11th, 1926, Mr. W. J. Jenkins, I.A.S., officiating as Secretary.

Mr. Turner, Director, Technological Research Laboratory, was on leave combined with duty in England for a total period of 6 months from April 26th, 1926, and Mr. W. G. P. Wall, M.Sc., I.E.S., whose services were kindly placed at the disposal of the Committee by the United Provinces Government, officiated as Director during Mr. Turner's absence.

Mr. Richardson held charge of the office of Spinning Master, Technological Laboratory, throughout the year.

Messrs. Sen, Dutt, Hari Rao and Bathija, Research Assistants, Technological Laboratory, held charge of their respective offices throughout the year save for short periods of leave.

Reference to increase in the staff of the Technological Laboratory will be found in the Director's report (page 45).

Cotton Research Botanist.—Mr. Trevor Trought, Cotton Research Botanist, Punjab, held charge of his post throughout the year.

18. *Provincial and Local Cotton Committees.*—Provincial Cotton Committees continued to do useful work and meetings were held as follows:—

Madras	One.
United Provinces	*Nil.*
Central Provinces and Berar	One.
Punjab	Two.
Burma	One.

In Bengal a Sub-Committee of the Provincial Board of Agriculture deals with cotton matters. In Bombay no Provincial Cotton Committee has yet been appointed and several matters which normally would be dealt with by such a Committee were referred by the Government of Bombay to the Central Cotton Committee and dealt with mainly by their Local Sub-Committee. Other local cotton matters are dealt with by the Divisional Cotton Committees appointed by the Government of Bombay which met during the year as follows :—

Sind	Once.
Gujerat	Twice.
Khandesh	Four times.
Southern Division, Dharwar	Once.

In Madras, Local Cotton Committees exist for the following areas :—Nandyal, Bellary, Guntur, Tuticorin and Tiruppur.

CHAPTER II.

THE WORK OF THE YEAR.

The Cotton Transport Act.

19. Bombay.—This Act was in force in the Bombay Presidency throughout the year in the following areas :—

In Gujerat three protected areas were maintained, *viz :*

The South-Surat zone, the Surat zone, and the Olpad Ankleshwar zone.

In the Southern Division also three protected areas were maintained, *viz :*

The Kumpta-Dharwar zone, the Bijapur zone, and the Bagalkot zone.

In this Presidency the restrictions apply to the transport of cotton (kapas and seed) by road as well as by rail. The enforcement of the restrictions on transport by road between the three comparatively small Surat zones has always presented some difficulty, but these restrictions were necessary so long as a definite area of inferior cotton existed in the Olpad taluqa. The replacement of short-stapled varieties by the improved variety 1027 A.L.F. having made considerable progress—and the active co-operation of the Co-operative Society in the tract between the Tapti and Nerbada in this policy having now been secured—the Government of Bombay withdrew the restrictions on the transport of cotton by road between the South-Surat, Surat and Olpad-Ankleshwar zones on August 10th, 1926, the first crop to be affected by the changed condition being that to be harvested in March-April 1927. It has been made a condition of the concession that the amending notification will be cancelled if inferior cotton is found to be grown in any of the protected areas. The restrictions on the transport of cotton by rail between the 3 zones have been maintained. (For amending notification see Appendix I.)

The question of applying the Act to the protection of a Broach area is still under consideration.

20. BARODA.—The Baroda Government continued to enforce a similar law and maintained three zones corresponding with the Bombay protected areas.

21. RAJPIPLA.—The Rajpipla State also maintained in force a State law on the same lines as the India Act, the whole State being constituted as one area since it now grows one improved variety of cotton.

The history of Rajpipla cotton provides an excellent example of what can be done by the exclusion of inferior cotton coupled with the systematic introduction of superior seed. Some years ago, the cotton of this State was almost a drug on the market·

Since then the Surat 1027 variety has been steadily introduced and in this way, with the assistance of the cotton Transport Act and of State control of the ginning factories, the standard of Rajpipla cotton has been raised to equal that of the best Surat. On the recommendation of the Indian Central Cotton Committee the East India Cotton Association introduced special standards for Rajpipla cotton in Bombay from June 1st, 1925.

22. Most definite information has been received from all sources as to the value of the Act in improving and maintaining the quality of the cottons grown in these areas. The opinions of millowners, which are reproduced in Appendix II, show very definitely that since the Act was brought into force Indian mills have been able to purchase more freely of these stapled Indian cottons. Further, the trade records indicate that the improved quality of the cottons has been reflected in the prices paid. Local enquiry in the districts shows that enhanced prices have been realised by the cultivators.

In the southern part of the Presidency the Act has continued to work smoothly. Such complaints of mixing as are now received refer to the mixing of ordinary Dharwar-American cotton with the Agricultural Department's improved strain of Upland, the mixing of ordinary Kumpta with the Department's pure strain of improved Kumpta and the mixing of Kumpta and Upland cottons. This question should largely settle itself as the areas under the improved varieties extend, and there is no doubt that the grosser forms of adulteration, such as the mixing of short-stapled Khandesh cotton, or Bombay mill waste, with valued stapled cottons, have been stopped.

23. MADRAS.—The Cotton Transport Act was put into force in the Madras Presidency by notification No. 344 of the 18th of November 1925 approved by resolution of the Madras Legislative Council on August 26th, 1925, a copy of the notification will be found in Appendix III.

In the Northerns and Westerns area the notification appears to have worked smoothly and to have achieved the desired object. Certain difficulties, however, have arisen over the administration of the Act in the South. Satisfactorily to protect the more important staple cotton areas it would be desirable to replace the two existing zones, *viz*: the Tiruppur-Cambodia and Tinnevelly zones by four, *viz*: a smaller Tiruppur-Cambodia zone, a Dindigul zone embracing the tract south of the Tiruppur-Cambodia zone, a Tinnevelly area and a Salems area. This course apparently would not immediately be practicable, and a less complete division is all that can be attempted at present. In particular the necessity of allowing *kapas* to move freely from the country around Dindigul both to Tiruppur and to Virudhunagar (situated in the Tiruppur-Cambodia and Tinnevelly zones respectively) has been strongly urged. The matter has been fully discussed both in the Central Cotton Committee and in the Madras Provincial Cotton Committee and the present zones will be revised in the light of the experience gained.

As to the need of the Cotton Transport Act in Madras to keep out such thoroughly inferior cottons as *Pulichai* (G. neglectum roseum) and Mysore-American from the staple cotton tracts and to keep Coconadas cotton out of the Northerns and Westerns area there is little or no difference of opinion. The degree to which the organisation can be elaborated to assist the Agricultural Department's efforts to establish compact blocks of superior cottons is a point on which there is less unanimity and here it will be necessary to progress gradually, due regard being given at each stage to the legitimate requirements of the cotton trade, to the existence of suitable markets and to the adequacy of ginning facilities in the various tracts.

24. It is with regret that the Committee record that no action has yet been taken by the Government of the Central Provinces

and Berar to give effect to the recommendations made by the Indian Central Cotton Committee and by the Central Provinces Provincial Cotton Committee in 1923 that protected areas should be created in the Central Provinces and Berar, respectively, to prevent the abuses which take place at present.

REGULATION OF GINS AND PRESSES.

25. The Cotton Ginning and Pressing Factories Act, which was passed by the Indian Legislature in March 1925, came into force on August 8th of that year and hence has been in force for the whole of the cotton season 1925-26. The Central Cotton Committee devoted considerable attention to the marking of bales, the central feature of the Act, and it is satisfactory to record that no serious difficulties have been met with in complying with the rules. At the commencement the majority of presses used hand punches for applying the press mark to the central hoop (the hoops being stamped before pressing) but two suitable punching machines, both inexpensive, were rapidly put on the market and the use of such machines is steadily increasing. Once pressing factories settled down to the fact that they had to mark their hoops little difficulty was experienced. No cases have come to the notice of any member of the Committee where the punching of the press-mark on the hoop has resulted in the weakening of the hoop or of burst bales during pressing.

26. Some delay occurred before all presses marked their bales systematically. Returns were obtained from various members of the Committee and from the East India Cotton Association of places from which unmarked bales were still being received and the attention of the Provincial authorities called to the matter. There has been steady improvement in the marking of bales and a further incentive to careful compliance with the law has been afforded by

the new bye-law of the East India Cotton Association which is quoted below :—

Bye-law 53 (1).

"Against the Hedge contracts shown in column (1) of Schedule B, the contracts shown in the corresponding column (2) and the cotton pressed only at the places enumerated in the corresponding column (3), subject to such modifications as the Board may from time to time make thereon against each contract, shall alone constitute a fair tender provided that :—

(1) *It is of the description sold and provided that if pressed after 1st September* 1926 *it bears press marks in conformity with the provisions of the Cotton Ginning and Pressing Factories Act of* 1925 *: or with the law in force for the marking of bales in any Indian State.*"

This bye-law is in accordance with Section 14 of the Act which provides that after the expiration of one year from the commencement of the Act any person who has made a contract for the purchase of baled cotton may require that no bales other than bales marked in accordance with the Act shall be supplied in fulfilment of such contract and may refuse to accept bales which are not so marked. This section became effective on the 8th of August 1926 and hence for the cotton season commencing September 1st of that year.

27. The rules under the Act leave to the owner of a pressing factory the option of marking the running number on the bale either by punching it on the central hoop or by stencilling it on the hessian on the flat side of the bale. Most press-owners have adopted the latter alternative but, for the better protection of the reputation of their presses, some press-owners who bale cotton both for themselves and for other clients have decided to punch the running numbers on the hoops, especially in the case of clients' cotton. On the whole

the running numbers on the hessian have been found satisfactory. Some complaints have been received that the punch marks on the hoops are small and not easily found, but any minor inconvenience in this respect is of less importance than the considerations which led the Central Cotton Committee to decide that the press mark should be placed on the hoop for, in view of Section 14 of the Act, it is essential that so long as a bale of cotton remains a merchantable bale so long shall it bear the mark of the press. A few instances of difficulty, owing to secondhand hoops having been used, have been reported, but in no case is it clear that any real confusion has arisen on this account. In the first place new hoops are insisted upon by most buyers when the cotton is for export and secondly a very large number of pressing factories use only new hoops. Secondhand hoops are sold periodically by Indian mills and are purchased by those press-owners who use secondhand hoops but in the majority of cases, there is little likelihood of a hoop being used twice in the same season, though such a possibility exists in the case of cotton purchased locally by up-country mills. The remedy lies largely in the hands of buyers, (*i.e.*, of the mills) since they are entitled to insist that cotton delivered to them shall be correctly marked. Further, with very little trouble mills could ensure that no marked hoops leave the mill compound in time to be used again during the same season. Many mills ordinarily use up marked hoops for other purposes, such as piece-goods bales, thus avoiding their return to the market. There appears to be no reason for any modification in the present rules for the marking of bales.

28. It is satisfactory to record that a number of Indian States have taken steps to put similar legislation into force. In order to avoid confusion the Central Cotton Committee drew up a list of press marks proposed for the various States which, after certain alterations to meet the wishes of certain States, has been approved by the Government of India and has been adopted. In Appendix

IV will be found the press marks prescribed for the different provinces and different States. The marking of bales has already been adopted by the following States:—

Alipura,	Jaipur,
Alwar,	Jodhpur,
Baroda,	Katosan,
Cambay,	Nabha and
Hyderabad (since the close of the year),	Rajpipla.

The Baroda State have passed a law on the lines of the Cotton Ginning and Pressing Factories Act and this law is already in force. The Rajpipla State had previously passed a Cotton Improvement Act which, in several respects, goes considerably further than the Cotton Ginning and Pressing Factories Act; they have therefore made rules under their own Act prescribing the marking of bales, the returns and records following the same lines as the system in force in British India. Other States, almost without exception, have replied that they are prepared to take action on the lines of the Cotton Ginning and Pressing Factories Act. In the Indore State the Act and Rules will come into force on September 1st, 1927, and the Hyderabad State has accepted the principle of the marking of bales, but still has under consideration the question of whether their own Act should provide for the licensing of gins and presses. By the end of the present cotton season it is expected that practically all Indian States will have brought their rules into force. It will be observed that the bye-law passed by the East India Cotton Association is so worded as to provide that baled cotton from any Indian State which has introduced rules for the marking of bales must be marked in accordance with such rules in order to be tenderable.

29. The weekly statements of cotton pressed throughout British India, which the compulsory returns under the Act have now rendered possible, commenced in September 1925 and these returns have already proved of great value both to the cotton trade and to Agricultural Departments. The value of these returns will increase as time goes on as comparison with the figures for the previous year will enable the cotton trade to gauge the progress of the marketing of the crop, thus affording most important independent statistics as well as a supplement to the provincial cotton forecasts. As a check on the cotton forecasts the present returns have already proved of value since they have enabled the sources of important errors in Sind and the Punjab to be traced to their source and steps taken to prevent a repetition of such errors in future years. In both cases the pressing returns showed that the production had been considerably under-estimated. In Sind the error in forecasting was due to imperfect returns from the districts concerned—both of areas and condition. In the case of the Punjab the analysis of the figures of different trade blocks showed that much larger quantities of cotton had been pressed than the forecast yields indicated. In one block the fact was brought to light, that owing to a recent extension of irrigation facilities, the Ferozepore district has become much more important as a cotton-growing area than previously, and the conventional estimates have now been replaced by regular returns as in other districts. In the Multan block the discrepancy was partly due to cotton from Indian States coming into British territory for pressing and partly to the yield from the late pickings having been much larger than was expected when the final forecast was issued. The following Indian States are now sending in regular weekly returns of cotton pressed :—

Nabha, Jodhpur, Jaipur, Alipura, Rajpipla and Baroda.

Here also it is hoped that by the beginning of the cotton season 1927-28 all the more important cotton-growing States will have come into line with British India in this important matter.

30. In connection with the prevention of malpractices the need for the present Act has been exemplified during the year. Complaints had been received for over a year of the unsatisfactory quality of Sind and Sind-Punjab *desi* cotton which had been sold to the Continent, the principal complaint being in regard to the unreasonable quantity of seed, and even of unginned *kapas*, present in such cotton. The matter was taken up by the Bremen Cotton Exchange with the International Federation of Master Cotton Spinners' and Manufacturers' Associations and both organisations communicated with the Central Cotton Committee on the subject. This type of *desi* cotton, which is of short staple, is used, amongst other purposes, for the manufacture of coarse hosiery yarn and the presence of seed in the cotton not only causes considerable difficulties in spinning but frequently makes the yarn unsuitable for the purpose intended. The buyers reported details of the press marks on the bales complained of which enabled the cotton to be traced to the factory where it was pressed which, in this particular instance, proved to be a factory belonging to the exporting firm. The matter was taken up with the exporters and it is probable that the publicity that has been given to this complaint will result in its being remedied.

31. Two other abuses which are still of great importance are the mixing of Punjab-American cotton with short staple cotton, and the watering of cotton in presses, more particularly in the Central Provinces and Berar. These subjects are receiving attention; it is sufficient to say here that the Cotton Ginning and Pressing Factories Act places a buyer in a much better position to protect himself against unsatisfactory cotton of this description than he previously occupied.

COTTON STATISTICS.

32. Reference has already been made to the valuable statistics now provided through the medium of the Cotton Ginning

and Pressing Factories Act. Voluntary returns of loose cotton received in spinning mills are now regularly received from the principal cotton provinces and several States.

33. The Government of India has accepted the recommendation of the Central Cotton Committee that the internal rail-borne trade returns for cotton should be re-established and arrangements for the publication of these in the *Indian Trade Journal* have recently been made. It is as well to emphasise that the rail-borne trade returns are of comparatively little direct use for trade purposes, though the new method of compilation and publication may increase their value in this respect. The real value of these statistics is the means which they afford to Directors of Agriculture, and other officers responsible for the preparation of cotton forecasts, of checking the basis of their forecasts by means of independent figures which enable the total production in certain blocks to be calculated. References to the statistics of cotton consumption published with the final cotton forecasts by the Director-General of Commercial Intelligence and Statistics show that even when allowance is made for the changes in Bombay stocks from year to year (and it should not be forgotten that such stocks may vary by as much as half-a-million bales) the amount of cotton consumed in India and exported has generally been considerably larger than the estimated crop. As there is no means of testing the accuracy of the conventional figure adopted for non-mill consumption, it is impossible to check the crop forecasts properly from consumption figures. But if it be assumed that non-mill consumption does not vary greatly from year to year, it will be seen that there is a considerable error in the forecasts generally, though not always, in the direction of underestimation. With the help of the cotton press returns and the new rail-borne trade statistics it is hoped that the various sources of error will be located, thus enabling an improvement to be effected in the accuracy of the forecasts.

34. The Central Cotton Committee publishes a monthly statement of the consumption of *Indian* cotton consumed in Indian mills based on returns received under the Cotton Cess Act and direct returns received from the Indian States mainly concerned.

FINANCE OF THE COTTON CROP.

35. As indicated in the last report it was decided to undertake local investigations in four areas, *viz.*, Khandesh, Berar, North Gujerat and the Northerns and Westerns area in Madras. These investigations have now been completed and the reports considered by the Committee. The village investigations were directed to ascertaining certain details from each cotton grower in each of the villages selected for the enquiry as being typical of the tract under investigation. Replies were received from the following numbers of individual cultivators in each tract :—

Khandesh	813
Berar	940
North Gujerat	1,065
Madras Northerns and Westerns ..	758

The borrowings of each cultivator, the source of the loan, the interest paid, the conditions of the loan, details of the crop produced, of the method of sale, of the prices obtained and of the time of sale were recorded. The views of cultivators on their marketing difficulties were also elicited and, particularly in Berar and Khandesh, a good deal of first-hand information was obtained as to the working of the local cotton markets. In addition the investigators themselves visited the markets and obtained details of the disposal of a large number of individual cart-loads of kapas—both of those brought in by cultivators themselves and those brought in by middlemen. The most outstanding results were those obtained from Khandesh and Berar where the investigations were well carried out and the results fully worked up. The North

Gujerat enquiry also gave considerable information of importance, but owing to the fact that the area chosen produces *Wagad* cotton (the closed boll variety), a complicating factor, *viz.*, the sale of bolls, was introduced which rendered it difficult to generalise from results recorded. Nevertheless, in addition to providing local information of real value, this enquiry in several respects confirmed the conclusions arrived at from the Khandesh and Berar investigations.

36. In the Madras Northerns and Westerns area the investigation was carried out under somewhat different conditions. For the three tracts referred to above a wholetime staff, the cost of which was met by a grant from the Committee, was employed. In Madras an attempt was made to obtain the necessary information through the medium of agricultural assistants engaged on district work without relieving them of their own duties. As a result only a portion of the enquiry could be completed and while most useful information in regard to cotton growers' borrowings was obtained the data on sales were entirely inadequate owing to the agricultural assistants being very fully engaged on other duties. Hence it has been decided to repeat this investigation with a full-time staff next year.

37. In Appendix V will be found a summary of the reports on the Khandesh, Berar and North Gujerat investigations but a few of the broader conclusions may be referred to here. In the first place it was definitely shown that in Khandesh and Berar the sale in advance of the standing crop, forward sales on any considerable scale and the mortgaging of the crop are now practically unknown. It was also established that although cultivators had borrowed considerable amounts from money-lenders and Co-operative Societies for the financing of their agricultural operations, they were not hampered by their borrowings in disposing of their crop to

what they considered the best advantage. Further in a large majority of cases, both in Khandesh and Berar, the money-lenders were not purchasers of kapas. It has generally been assumed that the cotton grower stands in urgent need of money about the time when his crop is ready and is therefore driven to sell it at once even at unfavourable rates. This supposition, however, was not in accordance with the experience of some of the co-operative banks and was abundantly disproved by the facts elicited by local investigation. In Khandesh and Berar far from rushing their *kapas* to market growers were found to hold up their *kapas* for considerable periods presumably in the hope of an improvement in price and in many instances sales were not completed until March and April although, the crop having been distinctly an early one, picking had been completed about December. The crops of the year were not particularly good ones, prices on the whole were falling steadily and the general information obtained suggested that the earlier sales were made less through financial pressure than because the growers were not inclined to take risks.

38. The nett result of these enquiries may be summed up in the statement that what the cotton grower appears to need most, once his crop is ready for market, is better market organization and that finance at this stage is of secondary importance.

39. The two areas, Khandesh and Berar, which have so many general features in common were deliberately chosen because in Berar open cotton markets controlled by law have been in existence for many years, whilst in Khandesh such markets as exist are entirely unregulated. At various times critics of the Committee's proposals for open cotton markets have expressed considerable doubt as to the number of cotton growers actually using such markets. This question was investigated in two different ways. In the village enquiry the disposal of each cultivator's

cotton was recorded; in the market enquiry the source of every cart-load of cotton recorded was enquired into. The average for the Berar villages shows that the kapas of 53 per cent. of the cotton growers, and 68 per cent. of the total kapas sold in the period under investigation, was marketed in the open markets by the growers themselves. The market records showed that of the 2,343 individuals bringing kapas to market who were recorded, 2,050 or 86·5 per cent. were actual cotton-growers. This disposes at once of the contention that cotton growers do not use open cotton markets.

40. In Khandesh where the markets are unregulated, as might be expected, the proportion of cultivators who took their cotton to markets instead of selling locally to travelling middlemen or village dealers, was smaller than in Berar. The following table shows the actual percentages :—

Percentage of cultivators selling in :—

	Market.	Village.	Partly in Market and partly in Village.
	Per cent.	Per cent.	Per cent.
West Khandesh	19	69·5	11·5
East Khandesh	8·5	91·5	....

On the whole, it may be said that the number of cultivators using such cotton markets as exist in Khandesh is considerably higher than was expected. The number of cultivators, who, at various times, had used such markets but had not done so this year, was considerable and it seems clear that if open cotton markets in Khandesh can be properly regulated they will be largely used by cotton growers. The cotton growers' objections to the unregulated markets as at present existing, may be summarised as follows. Great

exception is taken to the system of secret bids and all growers urged that in cotton markets all bids should be open and the rates properly announced. Secondly, in many cases, the rates actually paid were not those settled in the markets. Both in Berar and Khandesh weighment usually takes place in the ginning factory and in Khandesh in particular the rate actually paid is really settled after weighment has taken place. The deductions, which are made after weighment has commenced, frequently are very substantial, and in a few cases were so heavy that the sellers took their *kapas* away. Such cases were rare and growers stated that they had to accept the rates paid even when they realised that they were unfair. A number of cultivators stated that although in the markets the weighments and prices are better than they can obtain in the village yet, owing to the disputes referred to above, they prefer to sell locally. In some of the Khandesh markets a number of other abuses seem to be prevalent and cultivators complain of unjustifiable deductions from weight and of deductions of various kinds, generally alleged to be for charities, from the price.

41. The major complaints about the Berar markets were not dissimilar to those in Khandesh. There was less complaint about weighments or illegal deductions but complaints about disputes during weighment were almost as numerous. On the other hand rates were very much better known in Berar and cultivators, though not satisfied with the market management, realise that the markets are of advantage and use them accordingly. In their draft model rules for open cotton markets the Central Cotton Committee proposed a number of amendments to the present Berar rules, but it is now clear that even if the present rules were properly enforced the complaints would be infinitely fewer. The main need is to re-constitute the Market Committees for the Berar markets in such a way as to provide for representation of the cotton grower. At present the markets are managed almost entirely by buyers and their

commission agents, an obviously one-sided arrangement. Another matter which would seem to require attention in any amendment to the Berar rules is the fact that in Berar at present the brokers (who are licensed by the Market Committee), who sell on behalf of the cultivator, are not independent selling brokers. It was represented that brokers who act for both sides invariably watch the buyers' interests.

42. Constructive action should be possible in one other direction. If a cotton grower who has brought his cotton some distance from the market is offered an unsatisfactory price he is at present obliged either to accept the price offered or to take his cotton away and the latter alternative is often impracticable. There seems to be a real need for some form of warehousing facilities at the markets to obviate this difficulty. Probably any such warehousing agency would also need to make advances to the grower against kapas deposited for sale. This is a matter which requires careful investigation in the light of local conditions.

FURTHER INVESTIGATIONS.

43. The Committee has decided to finance further investigations during the cotton season 1927-28 in four areas, *viz.*, Sind, the Punjab, the North of the Broach cotton-tract and the Madras Northerns and Westerns area. It appears obvious that only by such local investigations, will the actual facts be obtained and it is only on such a basis of facts that constructive measures for the assistance of the cotton grower can be based. The results already obtained to a certain extent have been unexpected and for the areas investigated have revealed an unexpected degree of independence on the part of the cotton grower. It would be premature to draw general conclusions for the whole of India from investigations in three tracts.

OPEN COTTON MARKETS.

44. In the preceding section detailed references have been made to open cotton markets in Berar and Khandesh. Since the close of the year the Government of Bombay have published a Bombay (District) Cotton Markets Bill which will come before the Local Legislature shortly. The Bill follows in its essentials the recommendations of the Central Cotton Committee. Information has also been received that the revision of the Central Provinces and Berar Cotton Market Rules is now under consideration and there is a hope that cotton markets in that province will now be placed on a more satisfactory footing; it should be stated that even now they are probably more satisfactory than those in any other part of India.

MARKETING OF IMPROVED VARIETIES OF COTTON.

45. The Indian Central Cotton Committee has continued to devote attention to this aspect of cotton marketing. Reference was made in last year's report to the need of obtaining for growers, during the early stages of the introduction of a new variety, the full price for the new product even while production has not reached a stage at which the new cotton will attract attention in the major cotton markets. As was then stated, if an Agricultural Department is to succeed in organising the seed supply and in establishing a new cotton in compact areas, which is so essential to real progress, it needs to be in a position to assure to the grower an adequate reward for his enterprize. If new cottons are brought to their notice, there are numerous buyers in India who are willing to pay full prices for comparatively small lots, and in fact much of the progress made by the Agricultural Departments in the past has been due to the support given to them by individuals in this way. The Central Cotton Committee endeavours to assist matters at this stage by the provision of spinning test reports, which will indicate to consumers

what the possibilities of the new cottons are, and also by circulating to the cotton trade information as to the areas under new types of cotton, the approximate quantity produced and the markets where they can be obtained. As was indicated last year probably the most difficult stage is reached when a new cotton has passed the scale at which the Agricultural Department can keep in personal touch with the growers but has not yet reached the stage of being generally known on the major markets. In addition to the steps referred to above the Committee in several instances has been able to assist Agricultural Departments in disposing of small quantities of superior cottons.

46. Another method adopted is to supply the East India, Liverpool and Manchester Cotton Associations with type bales of improved varieties of Indian cotton. Such type bales serve a double purpose for in the first place they bring new cottons to the notice of consumers and secondly, provide authentic types with which intending purchasers can compare the cottons offered to them through the usual trade sources. Both in India and abroad, especially the latter, Indian cottons are sold against private types which do not correspond either with the East India Cotton Association standards or with the Agricultural Department's nomenclature. It is considered impossible to interfere with this system of sale, which has become a well established feature of the Indian export trade, but it is practicable to place both producers and sellers in a position to compare private types with the Agricultural Department's own types. Such type bales are only supplied for cottons which have been established on a commercial scale.

SPINNING TESTS.

47. More detailed reference to the tests which have been carried out on standard Indian cottons at the Technological Laboratory will be found in that section of the report and in the report of the

Director. An Annual Bulletin on these tests is published, and arrangements have now been made to carry out such tests at an early stage in the harvesting of the crop of each season in order that the results may be available to the trade in India shortly after the cotton comes on to the market in quantity. The seasonal variation in the quality of particular growths of cotton is a recognised fact and the Technological Laboratory is steadily accumulating data showing the range of such variations from season to season. The tests referred to above are carried out on samples grown under the Agricultural Department's own control and which have probably been somewhat more carefully handled than commercial cottons. Hence these tests represent the behaviour in spinning of new cottons grown under good, if not optimum, conditions and may not be representative of the bulk of the crop. But they do indicate the variation in the same cotton grown from year to year under standard conditions and it is hoped that the results will be of interest to the trade and will assist in the marketing of new varieties.

48. Through the kind assistance of the Empire Cotton Growing Corporation and of the Oldham Master Cotton Spinners' Association, a further series of tests on improved Indian cottons capable of replacing Americans for many purposes have been carried out at Oldham under ordinary Lancashire mill conditions. These tests have confirmed in a most interesting manner the results obtained in the Technological Laboratory and indeed were more in the nature of a demonstration than an experiment. The results are reproduced in Appendix VI and show clearly that several of the Indian staple cottons are capable of replacing Americans. Temporarily this point has become of somewhat academic interest since the record American crop of 1926, following the large crop of 1925, has assured an abundant supply of American cotton for English and European mills. Further, apparently as a result of a temporary shortage of stapled cotton in India the prices of Indian cottons have been considerably

above American parity, and there has been an actual import into India of appreciable quantities of American cotton for use in Indian mills. Nevertheless the capabilities of these improved Indian cottons have now been established definitely, and it is probably only a matter of time before the export demand for them is renewed.

THE LIVERPOOL EMPIRE FUTURES COTTON CONTRACT.

49. In last year's report reference was made to the new Empire Contract in Liverpool against which Indian cottons of approximately an inch in staple and of suitable grade are tenderable. Throughout the year the Central Cotton Committee has kept in very close touch with the development of this hedge contract and in last year's report it was stated that the new contract was of very limited application to Indian cottons for a variety of reasons. Whilst on leave the Secretary had an opportunity of placing before the Directors of the Liverpool Cotton Association the Committee's views on the contract and their suggestions for improvement. As at present framed the contract is a narrow one, since cotton to be tenderable must be of fair staple, equal to Strict Low Middling American in grade and not lower than Strict Low Middling American in value. The Empire contract, on account of the wider range of cotton tendered against it, naturally is at a small discount on the American futures contract, against which Low Middling American is tenderable, and there seems no reason why the Empire contract should be stricter than the Liverpool American contract. A further difficulty in practice is that no standards have been established for the Empire cottons tenderable against the Empire contract and hence such cottons have to be judged against American standards. This is unsatisfactory and instances are on record where a cotton, which otherwise would have been classed as points ' on ' for grade and staple, has been actually rejected on account of a difference in colour. An indication has already been received from the Liverpool Cotton Association that

by the provision of a " franchise " any difficulty over the value clause of the contract might be obviated. The Central Cotton Committee have urged that in addition to this the contract should be broadened by admitting cotton not below Low Middling American in grade, and further have urged the importance of establishing a certain number of standards for Indian cotton against which Indian cottons tendered against the Empire contract would be judged. In the opinion of the Committee the Empire futures contract is not likely to be of real use to Indian exporters unless modifications on these lines are made. The Committee's views received a careful and sympathetic hearing from the Directors of the Liverpool Cotton Association, and it is understood that the question of amending the contract is now under consideration. Whether it will be found possible to make the alterations which the Central Cotton Committee have recommended cannot yet be stated, for it must be borne in mind that this contract is also intended for use as a hedge for such Empire cottons as Uganda which are considerably above Middling American in value on account of their superior staple.

MEASURES TO PREVENT THE INTRODUCTION OF THE MEXICAN BOLL WEEVIL.

50. As stated in last year's report a notification was issued by the Government of India under the Destructive Insects and Pests Act, 1914, restricting the importation of American cotton to one port for the whole of British India, *viz.*, Bombay, and permitting it there only on condition of fumigation with Hydrocyanic acid gas. The notification came into force on 1st December 1925. It was originally intended to restrict importations to the fair weather season (November 1st to May 31st), but in order to meet the needs of the Bombay mills, and as it was found that fumigation could be carried out effectively during the monsoon, this restriction was removed. During the fair-weather period American cotton is landed after fumigation at the special cotton wharf at Haji Bunder. During

the monsoon special arrangements are provided at a suitable berth in Prince's Dock where quarantine sheds have also been provided by the Port Trust so that any cotton which cannot immediately be fumigated owing to weather conditions, is properly quarantined until it can be dealt with.

51. The system of fumigation in barges has worked satisfactorily and smoothly. The rates originally fixed were Rs. 3-6 per bale for the fair weather period and Rs. 4-14 per bale during the monsoon. As a result of the economies which it was possible to effect in actual working the Committee were able to recommend to the Government of India, shortly after the close of the year under report, that the fumigation fees should be reduced. The Bombay Port Trust have also found it possible to reduce the fees charged by them, especially those for the monsoon period, and the fumigation charges from the 1st November 1926 stand at Rs. 3-1 per bale for the fair season and Rs. 3-12 per bale for the monsoon period. The heaviest individual item in the cost of fumigation is the transport of the bales in barges including the use of the barges for fumigation purposes; the Committee are now making efforts to reduce these charges in order to permit of a further reduction in the fumigation fee. The additional fee of Rs. 2 per bale which is levied under the rules on cotton which arrives without the specified notice, remains unaltered. Under the notification and rules importers are required to give three weeks' notice of the arrival of American cotton and adequate notice is essential to smooth and economical working. Refunds of the additional fee for inadequate notice have been granted in a number of cases where only a technical breach of the rules had been committed, and during the fumigation year 1925-26 this fee was actually charged in extremely few cases.

52. Samples are fumigated by special arrangement at a nominal charge of Rs. 2 for each parcel not exceeding 20 lbs. in weight.

Sample bales not exceeding six in number are fumigated at a special fee of Rs. 10 per bale. Subject to these exceptions the minimum fee for a consignment of American cotton is Rs. 150.

53. Since the close of the year American cotton importations have increased very greatly in volume owing partly, no doubt, to the large American cotton crop and low prices, but more particularly to the temporary shortage of certain classes of Indian staple cotton. The Committee has devoted much attention to ensuring that the charge to the importer shall be kept to an absolute minimum. The quantity of American cotton imported from December 1925 to October 1926 amounted to 43,501 bales; advices indicate that quantities as large as this will be handled during individual months during the coming season. Fumigation is supervised by an Assistant from the Committee's Technological Laboratory and carried out by a temporary staff of fumigating chemists provided by Government.

54. Owing to the larger American crops and the indications that boll weevil damage in America is now much less than in the past, the suggestion has been made that the fumigation of American cotton imported into India is no longer necessary. The fact should not, however, be overlooked that seasons of high and low intensity are a common feature of most insect pests. Further, there is little doubt that the reduction in damage caused to the American cotton crop by the boll weevil is largely due to the very extensive, and expensive, control measures adopted to fight this pest. Until it can be scientifically proved that there is no risk of the boll weevil reaching India alive, the interests of cotton-growing in India require that all necessary precautions should be taken to prevent the introduction into this country of what is probably the most destructive insect pest of recent years.

ROYAL COMMISSION ON AGRICULTURE.

55. The Committee furnished the Commission with a memorandum outlining their constitution and aims and indicating the work accomplished and in progress. They also submitted written answers to those portions of the questionnaire issued by the Commission on which they were able to supply information or in regard to which it was possible for the Committee to put forward a corporate opinion. The Vice-President (Sir Joseph Kay) and the Secretary were selected to give oral evidence before the Commission.

CHAPTER III.

RESEARCH.

56. *Technological Research Laboratory.*—The report of the Director of the Technological Laboratory will be found in Chapter IV. The year has been one of steady progress in all directions. The facilities which the Spinning Laboratory offers have been freely taken advantage of by various Agricultural Departments, and there is no doubt that the arrangements which have been organised for testing new cottons are appreciated. Work on standard Indian cottons, most of which are those improved types which the Agricultural Departments have established on a commercial scale, has been continued on the lines originally laid down but with extensions in several directions. The Bulletin describing the full details of the results of such tests and the procedure adopted, which was published in April 1926, was received with considerable interest; a further edition will be issued in April 1927 giving the results of a further year's work. As it has been found that the work on the variations of such standard cottons from season to season is of considerable interest to the cotton trade, arrangements have recently been made for the results with individual cottons to be separately pub-

lished as early as possible in each season. As time goes on the value of these tests in facilitating the marketing of new varieties of cotton will become more apparent.

57. In the Research Laboratory considerable progress has been made with the scheme of work for the examination of the measurable characters of the cotton fibre and the correlation of such data with spinning tests. The importance of such work and its bearing on cotton breeding has been explained in previous reports and in the Committee's report on the "Present Position of Cotton Research in India." It is sufficient to say here that extensive data on the spinning properties of various cottons are being gradually built up in the course of the work of the laboratory and that at the same time data are being obtained for those fibre characters likely to have a bearing on spinning value with the object of correlating the two series of data and throwing some light on the relative importance of individual fibre characters. The second part of the work is laborious, methods and apparatus have to be designed and tested and the range of variation in each character determined. Several methods have now been worked out and are in regular use and methods for other determinations are under trial.

58. The Director of the Laboratory, Mr. Turner, was absent on leave during a portion of the year, part of the time being devoted to the study of the methods and apparatus adopted by similar Research Institutes in England. The Committee, by formal resolution, recorded their appreciation of the excellent work done by the Officiating Director, Mr. W. G. P. Wall, M.Sc., I.E.S., whose services were so kindly lent to the Committee by the United Provinces Government.

59. *The Indore Institute of Plant Industry.*—The annual report of the Director will be found in Appendix VII together with a s upplementary report subsequently received. It will be seen that

in less than two years from the time when Mr. Howard assumed charge the buildings and equipment have been completed, that the Institute is in full working order and that a considerable amount of experimental work is in hand. In Appendix VIII will be found the general programme of work of the Institute which was laid down when the scheme was approved. Briefly, it may be said that the main work of the Institute will be the general botany, physiology and genetics of Indian cottons. In addition a number of agricultural investigations connected with cotton-growing on the black soils are being undertaken.

60. *Research Grants.*—The oldest of the various research schemes for which the Committee gives grants have been in progress about three years. In Appendix IX will be found a technical note on the various schemes. The Committee's grants have been divided amongst various branches of agricultural research on cotton as follows :—Plant Breeding, four; Cotton Entomology, three ; Cotton Physiology, three ; Cotton Mycology, three.

Annual progress reports on each scheme are carefully considered by the Agricultural Research Sub-Committee, recommendations and suggestions made in regard to future work and a report placed before the full Committee for discussion. On several schemes the stage has now been reached where results are beginning to appear, and some of the scientific results obtained are being published shortly in the Memoir and Bulletin series of the Imperial Department of Agriculture. It may be permissible here, however, to refer to some of the main features of the progress reports, though it should be understood that many of the conclusions are tentative and that on all these problems considerable further work is necessary.

61. The object of the *Herbaceum Cotton Research Scheme* in the Madras Presidency is the isolation and testing of the "Herbaceum" constituents of the local cottons. This type is of great importance

in certain tracts on account of several desirable agricultural characteristics and it is hoped by the isolation of pure lines to secure improvement in lint characters, ginning percentage and uniformity. Several pure lines have now been obtained and are being tested on field scale; sufficient cotton for spinning tests will be available during the coming year.

62. The detailed study of artificial hybrids between Sea Island and Dharwar Upland cotton at Dharwar has yielded several strains of distinct promise which appear to combine with hardiness and agricultural yield a staple which in length and quality is considerably superior to the best of the local cottons. Spinning tests on some of the samples also gave encouraging results. It should be emphasised, however, that the work is still far from complete.

63. *Central Provinces Botanical Research Scheme.*—The object of this work is to produce types of cotton suitable for the Oomras tract possessing the necessary hardiness and resistance to wilt which the tract requires and in addition superior staple. Three such types, which yield well, have shown themselves resistant to wilt and which combine good staple with a reasonable ginning percentage, have now reached the field scale and will be tested under cultivators' conditions during the next season. In addition a general study of the cottons of the province is in progress and the possibilities of securing still further improvement by hybridisation are being fully explored.

64. *The Khandesh Cotton Breeding Scheme* is a new one, the grant having been given to provide an adequate staff for the thorough investigation of some crosses between G. indicum and G. cernuum which have shown considerable promise. The early stages of the work were carried out entirely by the Bombay Department of Agriculture and several of the new hybrids have behaved well

in field trials whilst spinning tests showed that the best strain was suitable for 30s counts as compared to 8/10s for ordinary Khandesh cotton.

65. *The Surat Physiological Research Scheme* is a study of the causes of bud, boll and flower shedding in Southern Gujerat and of the possibility of designing measures to reduce the loss of crop. At the same station an investigation on the Earias Bollworm is being carried out, and the two investigations are closely related since Earias Bollworm is responsible for a good deal of early shedding. The first two years' work showed that the shedding is not to any important extent due either to fungi or bacteria, and, further, that significance of the Earias Bollworm is considerably less than was originally assumed.

66. Work on the two newer physiological research schemes at Sakrand and Coimbatore respectively will be started as soon as the necessary staff is obtained. The Local Governments concerned have taken steps to secure the necessary scientific officers.

67. *The investigation on Pink Bollworm* (*Platyedra gossypiella*), which has been carried out at Cawnpore, financed partly by the Central Cotton Committee and partly by the United Provinces Government, has led to very definite results. In the first place quantitative determinations have been made on the loss of crop, both in quantity and quality, which this pest causes, and it has been shown definitely that when the crop is protected from it the increase both in the quality and quantity of the crop is remarkable. It has also been shown that when the crop is protected from *other* insect pests but infected to a known extent and at a known time by the pink bollworm, damage on the usual scale occurs. It has also been demonstrated both by experiments in cages and in an isolated block of 500 acres with cotton growing under normal cultivator's conditions, that if all seed is treated by heat to ensure the destruction of

pink bollworm larvæ the resulting crop is practically, if not entirely, free from pink bollworm damage. Hence there are now good grounds for believing that if *all* cotton-seed can be so treated the pest can be controlled. Experiments on the flight range of the moths have shown that work must be carried out simultaneously over a large area to prevent re-infection vitiating results of seed treatment. Work on other possible means of re-infection is still proceeding and Egyptian experience would indicate that it is very necessary that such work should be very thoroughly done. The scientific results obtained will shortly be published in full. During the coming year the details of heat treatment for the disinfection of cotton-seed on a large scale will be studied.

68. During the year the Committee sanctioned grants for a period of five years for work on the pink bollworm in the Punjab. This scheme is in no sense a repetition of the work at Cawnpore, for the main object is to determine the factors which make the pink bollworm a comparatively unimportant pest in the canal colonies at present though it is a serious pest in the South-Eastern Punjab. Prior to this grant being made one of the Committee's Research Students (working under the Government Entomologist, Punjab) carried out a careful investigation into the status and distribution of the pink bollworm in that province and has shown that while this pest is practically absent in the Western Punjab including the Canal Colony area and is found in small numbers in the central and northern districts of the province, it is a serious pest in the South-Eastern Punjab and is found in alarming numbers in the Eastern Punjab. In other words, conditions in the Eastern and South-Eastern Punjab are almost identical with those in the United Provinces so far as this pest is concerned. There is, however, an indication that climatic or other factors have prevented this pest from spreading to the same extent through the canal colony area and the Western Punjab, and it is extremely important that it

should be ascertained definitely if, in fact, such limitations do exist and, if so, what they are.

69. The third Entomological Research Scheme financed by the Committee is in connection with the Spotted Bollworm at Surat. At one time it was believed that this insect was responsible for the greater part of the early shedding of bolls in that part of the Bombay Presidency. While it is true that a large proportion of the shed material is infested with bollworm larvæ, it has been found that in cotton protected from this bollworm shedding is little, if anything, reduced, so that the insect pest is not the major cause of shedding. There is, however, reason to believe that by introducing changes in the forms of the plant or more generally by causing lateness of crop, Earias Bollworm does cause a definite loss of crop in Gujerat at any rate in certain seasons. The early indications that this pest can be controlled through the medium of parasites have proved illusory, and the study of the life-history of the insect is being continued with a view to designing other control measures. It has been shown that the removal of early damaged material and the use of insecticides are of little practical value as control measures. The information, however, which has been gained of the method of pupation, especially the fact that the pupae normally are found in the soil, mainly in cracks and at no great depth, indicates the possibility of simple control methods. In the course of this work it was found that the *pink* bollworm (Platyedra gossypiella) is present in Surat, as also in Khandesh, in larger numbers than was expected.

70. Cotton wilt investigations have been continued both at Dharwar and at Nagpur. The most that can be said at the present stage is that a good deal of spade work has been done and the ground cleared for further investigations. One method of dealing with this disease, *viz.*, the use of wilt resistant varieties or strains, is already being made use of but this is by no means a final solution

of the problem. At present work is directed to ascertaining the conditions which lead to the disease causing serious loss of crop.

Research Students.

71. Seven Research Students were selected in January 1926 and took up their appointment in the following April. A complete list of the Committee's Research Students showing how former students are now employed and the institutions and various branches of cotton research to which present students have been allotted will be found in Appendix X.

72. Two Senior Research Studentships were awarded during the year for further research work. In all four students have now obtained employment under Provincial Agricultural Departments in connection with the Committee's research schemes and one in the Committee's Technological Laboratory. Similar posts are available for seven students during the coming year.

73. The Committee's scheme of research students has been justified by results; these scholarships have enabled some very useful research workers to be added to the cadres engaged on the improvement of cotton growing in India. As a result of careful initial selection actual failures have been relatively few though, as would be expected, there is considerable variation in individual calibre.

Secretary's Tours.

74. Visits were paid to Nasik, Dhulia, Muttra, Lyallpur, Lucknow, Indore, Pusa, and Poona, during the year in connection with the work of the Committee.

Collection and Supply of Information.

75. As in past years a note on the recent progress in the introduction of improved varieties of cotton was contributed to the Bombay

Cotton Annual published by the East India Cotton Association. The substance of this is reproduced in Appendix XI. The Committee also provides a considerable portion of the general infomation contained in the Bombay Cotton Annual. It is believed that by the Committee's co-operation with the East India Cotton Association in the production of one annual publication containing all important statistical information on cotton production and consumption such information will most easily reach those able to utilise it.

76. The Committee is again indebted to the British Cotton Industry Research Association for the supply of their weekly summary of current literature in which abstracts appear of all work published in connection with cotton growing and cotton technology and reference is made to the scientific work bearing on these subjects, and also for the supply of copies of the Shirley Institute Memoirs.

77. To the Empire Cotton Growing Corporation the Committee is also indebted for the supply to the library and to members of the Committee copies of their own proceedings, of special reports obtained by them on cotton prospects in other parts of the Empire and of their *Review* which is published quarterly. They have also supplied us with a considerable amount of information in regard to special cotton legislation in other countries.

78. The Committee has in addition a large circle of Government Departments and public bodies, interested in cotton, both within and outside the Empire with whom an exchange of publications is made.

PUBLICATIONS.

79. The following bulletins and pamphlets were published during the year:—

1. Some Modern Problems of Scientific Research for the Improvement of Cotton Growing.

2. Results of Spinning Tests on Standard Indian Cottons.

3. Areas under New and Improved Varieties of Cotton.

80. The system of sending to the Agricultural Journal of India abstracts and notes on matters of use to agricultural officers and others engaged on cotton work was continued.

B. C. BURT,

Secretary.

CHAPTER IV.

Annual Report of the Director, Technological Laboratory, 1925-26.

The report is divided into three sections:—

I.—Spinning Laboratory.

II.—Research Laboratory.

III.—General.

I.—SPINNING LABORATORY.

Full advantage has been taken during the past year of the facilities provided by the Spinning Laboratory. A large number of tests has been made for Agricultural Departments and in connection with the tests on standard cottons. It is gratifying to be able to record that correspondence on the subject with the Agricultural Departments shows that they are now making use of the results of the spinning tests in deciding their future policy in seed distribution. Some idea of the work of the Spinning Laboratory during the year under review is conveyed by the fact that in all, 111 samples have

been spun, involving no less than 292 separate spinnings. These figures represent practically the maximum capacity of the Spinning Laboratory under present conditions, and show a large increase over those for the first year of the Laboratory's working, *i.e.*, the previous year 1924-25, when the corresponding figures were 54 samples spun, involving 119 separate spinnings.

Tests for Agricultural Departments.—The following is a statement of cottons tested for the various Agricultural Officers :—

(1) Director, Institute of Plant Industry, Indore—Two samples of Malvi cotton.

(2) Director of Agriculture, Punjab—Fourteen samples in connection with the special investigation on the purity of Punjab-Amercian cotton and on the effect of growing such cotton under different conditions.

(3) Deputy Director of Agriculture, Myingyan Circle, Meiktila—Four samples of Burma cottons.

(4) Director of Agriculture, Mysore—One sample of Mysore Selection 69.

(5) Cotton Breeder, South Gujerat, Surat—Six samples, four being new types and two being controls.

(6) Cotton Breeder, North Gujerat—Five samples of Wagad cotton, one being a control, the other four being new types.

(7) Cotton Breeder, Dharwar—Five samples : Dharwar No. 1, Gadag No. 1, Farm Kumpta and two new types.

(8) Deputy Director of Agriculture, Bellary, Madras—Four samples, two being new types, the others being local Mungari and Hagari 25, respectively.

(9) Deputy Director of Agriculture, Guntur, Madras—Three samples of Cocanadas, one being a control and two being new types.

(10) Cotton Specialist, Madras—Three new types of Cambodia cotton.

(11) Cotton Specialist, Madras—Two samples of Uppam cotton and one sample of local Cambodia cotton.

(12) Cotton Specialist, Madras—Two samples of Cambodia cotton, one being a control and the other a new type.

(13) His Majesty's Trade Commissioner, Bombay—One sample of Teheran cotton.

(14) A comparison of Saw-ginned and Roller-ginned cottons has been made for Punjab-American 289F, Wagad, and Cambodia cottons.

Standard Indian Cottons.—The work which was referred to in the last Annual Report relating to the Standard Indian cottons has been completed in the present year and a bulletin dealing fully with the subject has been published. The following cottons were selected in the first instance as standard Indian cottons being those more or less recent Agricultural Department Selections which have for the most part passed into extended cultivation. These are the following :—

	Bombay Cottons.	*Season.*
1.	Dharwar No. 1 (Kumpta)	1923–24, 1924–25.
2.	Gadag No. 1 (Dharwar-American) ..	1923–24, 1924–25.
3.	Surat 1027 A.L.F.	1923–24, 1924–25.
	Punjab Cottons.	
4.	Punjab-American 4F.	1924–25.
5.	Punjab American 285F	1923–24, 1924–25.
6.	Punjab-American 289F	1924–25.
	U. P. Cottons.	
7.	Cawnpore K. 22	1924–25.
8.	Cawnpore-American C.A. 9	1924–25.

9.	Bundelkhand J. N. 1	1924–25.
10.	Aligarh A. 19	1924–25.
	Madras Cottons.	
11.	Coimbatore 1 (Co. 1) (Cambodia 295) ..	1923–24, 1924–25.
12.	Nandyal (Sircar) 14, (Northerns)	1923–24, 1924–25.
13.	Hagari (Sircar) 25, (Westerns)	1923–24, 1924–25.
14.	Karunganni " c "	1923–24, 1924–25.
	Hyderabad Cotton.	
15.	Umri Bani	1924–25.

For purposes of comparison two American Cottons have been introduced into the series ; these are :—

16.	Mississippi	1923.
17.	Texas	1923.

It is intended to extend this list as new cottons are introduced ; it has, however, already been extended for the 1925-26 season by the introduction of Mollisoni cotton which is the type of Desi cotton distributed by the Agricultural Department in the canal colonies of the Punjab. As explained in the Annual Report for 1924-25, it is intended to repeat the spinning and other tests on the standard cottons year by year. In this way it is expected to obtain information regarding the quality of the cottons, season by season, so that it should prove possible on the one hand to follow the effect of seasonal variations and on the other to decide whether any deterioration of the quality is taking place. These records will, of course, be increasingly valuable as the number of seasons for which they are available increases.

These tests on standard Indian cottons were undertaken with a number of objects in view :—

(1) The primary reason for making these tests was to obtain as full information as possible about the standard Indian cottons,

both as to their fibre characters and their spinning capacities. It may here be remarked that the information which has now been published about these cottons has in fact proved to be of very great interest to the cotton trade in general.

(2) Another important reason for making these tests was the necessity for having a series of standards by which to judge other cottons. This is particularly desirable for new cottons produced by cotton breeders, and as no spinning test standards are generally available, it has been necessary for the Technological Laboratory to prepare its own standards.

(3) Seeing that it is a matter of very considerable importance as to what is the minimum weight of cotton on which a satisfactory spinning test can be carried out, the opportunity was taken in the course of these tests to examine the question.

A full discussion as to the methods of carrying out the spinning tests, and the fibre and yarn tests, with various general remarks upon the results, are included in the bulletin which was published in April 1926, giving the results of spinning tests on the standard Indian cottons. One satisfactory feature of these tests is that it can now be taken as definitely proved that the procedure which has been adopted for testing small samples submitted by cotton breeders, *viz.*, making spinning tests in duplicate on lots weighing only 5 lbs. each, is completely justified for the range of counts possible with Indian cottons, *i.e.*, up to 40's. Hence for the complete examination of a cotton—involving the duplicate spinning tests, the fibre tests, and the grader's valuation—the cotton breeder need only supply in the first place a sample weighing about 12 lbs. of which 10 lbs. is used in the spinning tests. This conclusion, which has been arrived at as a result of investigations on no less than 17 different cottons, is one of the very greatest importance in the work of the Technological Laboratory.

In connection with the spinning tests on these standard cottons certain questions of procedure arose. In particular it was found necessary to arrange the drafts from the card onwards so that the draft required in the ring-frame for yarn of 30's counts was about six, and to obtain other counts from the same rovings merely by changing the draft in the ring-frame. While it was recognised that this expedient might not be entirely satisfactory, it had the practical advantage of saving much time in making changes on the preparatory machinery, with all the additional tests of the wrappings which would have been entailed. The point is now under investigation whether the procedure adopted instead of the use of "balanced-drafts" makes much difference to the results in the range of counts into which the standard cottons were spun, *viz.*, 20's to 40's counts. Whatever may prove to be the results of this investigation, there is of course nothing to prevent any given cotton being spun under the theoretically correct draft conditions for each count separately, should the need at any time arise as may occur when a new strain is submitted by an Agricultural Department for a final test before it makes a final decision about the general distribution of the strain.

Some of the standard cottons gave a high blow-room loss. An investigation has therefore been made to see what additional blow-room treatment is necessary in order to effect any considerable increase in the cleanliness of the yarn made.

In the last Annual Report attention was drawn to the facilities available for obtaining information on two other questions:—

(1) The possible deterioration of cotton on storage;

(2) The effect of the physical conditions—temperature and humidity—under which the spinning tests are carried out.

Some progress has been made during the present year in the elucidation of both of these subjects. In the nature of the case a fairly long period must elapse before any definite conclusions can be arrived at with respect to the first question; it is hoped, however, that it will be possible to complete the investigation of the second question during the coming year.

In the Annual Report for the year 1923-24 it was stated that as a measure of control, both as regards the functioning of the machinery and the personal equation of the Spinning Master, it was planned to keep records as comprehensive as possible for each spinning test. Details were given of the records which it was proposed to keep. Most of these records have in fact been maintained, the only exceptions being those for :—

(1) Moisture content at various stages.
(2) Regularity of material at each stage.

With reference to the determination of moisture content, it may be observed that as a result of the installation of the Carrier Humidifying system the work in the Spinning Laboratory is now carried out under fairly constant physical conditions; in general the temperature is not allowed to fall below 80°F. nor the relative humidity below 60 per cent. This fact has to a large extent removed the necessity for the considerable amount of labour which would be entailed in making these determinations of moisture content.

Other reasons have arisen to render it unnecessary at the present time to make determinations of the regularity of material at each stage. The purpose for which it was intended to introduce these tests was to determine whether any observed irregularity were due to the cotton itself or to the factors of machinery or personnel engaged in its treatment. In the first place it is to be observed that such determinations involve an enormous amount of work in the ordinary routine spinning tests. There is no considerable diffi-

culty in designing the apparatus for these tests—such apparatus has in fact been designed for use in the Research Laboratories of the British Cotton Industry Research Association—but to carry out such determinations in the course of the routine spinning tests would necessitate a considerable amount of work and the employment of additional staff. It would in fact necessitate introducing additional machines in the present sequence of spinning machinery. To do this, however, would mean that the spinning tests would not be carried out under strictly normal conditions. Moreover, quite apart from this, the interference which could be entailed in the regular routine of the spinning tests would cause a longer time to be taken in the spinning test itself and give rise to additional work owing to the increased handling of the cotton which would ensue.

Nevertheless, if the tests for regularity were found to be essential, these difficulties would have to be faced. In the light of the experience which has been gained during the past two years, however, it can now be stated that there is no urgency in this question. It has been found that duplicate tests on any given cotton almost invariably agree very well with one another. The inference is therefore drawn that the factors which are introduced by the machinery and the personnel are practically constant ; in other words, the spinning test as at present carried out is a real guide to the quality of the cotton under test. Hence the conclusion can be drawn that there is no immediate need to make tests for regularity at each stage, and that although such tests may ultimately prove to be valuable in exceptional cases there is no present need for them in the routine testing of cottons for Agricultural Departments.

II.—Research Laboratory.

Occupation was taken of the new Research Laboratory at the end of September 1925. Since that date the work to which reference

was made in the Annual Report 1923-24 has been steadily proceeded with. It was explained in that report that, in order to determine the relations existing between the properties of cotton and its spinning value, investigations had been planned for the determination of the measurable properties of the cotton fibre as well as of the yarn. These investigations were to include determinations of :—

(1) Dimensional properties ;

(2) Elastic properties ;

(3) Electrical and optical properties ;

(4) Chemical properties ;

(5) Yarn properties.

From the outset work was begun on numbers (1) and (5) above. At the meeting in Bombay of the Indian Science Congress in January 1926 a paper was given on " The Study of the Cotton Fibre." This paper reviewed all the recent work which has been done on the physical and chemical properties of the cotton fibre. The paper was divided into three sections :—

(1) Structure and Composition ;

(2) Physical and Chemical Properties ;

(3) Practical Aspects.

In the first section a general description was given of the fibre. The second section dealt in some detail with recent work upon those properties of raw cotton which were considered to have important practical aspects, *viz.*—

(1) Length ;

(2) Ribbon-width ;

(3) Area of Cross-Section ;

(4) Wall-thickness ;

(5) Weight ;

(6) Strength;
(7) Tensile Elasticity;
(8) Surface Friction;
(9) Torsional Elasticity;
(10) Plasticity;
(11) Lustre;
(12) Electrical Conductivity;
(13) Porosity and Permeability;
(14) Physical and Chemical Stability.

Emphasis was laid on the great difficulties which arose in the measuring of these properties owing to the irregularity of the material, thus necessitating the making of a large number of determinations and a statistical treatment in each case. The final section dealt briefly with the general relation of these properties to various practical problems of the cotton industry. It was pointed out that there were considerable difficulties besetting the interpretation of these properties in terms of practical utility, and as an example their relation to the spinning value of a cotton was discussed in some detail.

At the meeting of the Committee in January 1926 a note was presented on "The Research Programme of the Technological Laboratory." This note reviewed critically the work which had been done up to the present time, as detailed in the paper on "The Study of the Cotton Fibre." A number of conclusions were drawn from this review and a research programme submitted. This programme was approved by the Committee and new work was at once started on the elastic and chemical properties of the cotton fibre. At the same time work was continued on the lines previously followed. From the beginning the work in the Research Laboratory has been co-ordinated with that in the Spinning Labo-

ratory. Determinations of staple length and of the distribution of staple length in any given sample are invariably carried out on every cotton submitted for test. These determinations are made by means of two instruments known respectively as the Ball's Sorter, and Baer Sorter, the results from the two instruments giving mutual checks. Measurements are also made by means of the microscope of the staple length, the fibre width, and the number and distribution of convolutions. The additional tests of the raw material which have been undertaken comprise the determination of staple strength and of rigidity, and the making of various chemical determinations on the different raw cottons. As was stated in the last Annual Report, it is by the accumulation of results of measurements of this kind and their subsequent statistical analysis that it is hoped to solve the problem as to the relation between the properties of a cotton and its spinning value.

III.—General.

(1) *Buildings and Equipment.*—There have been no notable additions or alterations to the buildings during the past year. Additional equipment has been provided to cope with the expansion of work following on the great demands made on the resources of the Technological Laboratory.

The testing equipment now comprises :—

1 Cook's Lap Regularity Tester ;
1 Cook's Moscrop Yarn Tester ;
3 Goodbrand Single Thread Testers ;
1 Goodbrand Lea Tester ;
1 Goodbrand Wrap Reel ;
1 Goodbrand Wrap Block ;
1 Goodbrand Yarn Regularity Examiner ;

1 Goodbrand Twist Tester,
1 Baer Conditioning Oven;
4 Baer Sorters;
3 Ball's Sorters;
1 Ball's Magazine Hair Tester;
1 Barratt Hair Tester;
1 O'Neill Hair Tester;
2 Bunge Microbalances.

(2) *Staff.*—The sanctioned scale of the staff given in the last Annual Report has remained practically unchanged, and has been found sufficient for the present for the work which has been undertaken. One important addition, however, has been the appointment of an Instrument Maker whose services have proved very valuable in many directions.

(3) *Research Students.*—Five Research Students have been accommodated in the Laboratory during the present year for the purpose of training in cotton technology. They have been severally engaged in Cotton Technology, in Fibre Testing for Length-distribution and Strength, and in determining Fibre Rigidity, the Chemical properties and the Microscopical properties of various cottons.

(4) *Indian Science Congress.*—As has been previously mentioned, the Indian Science Congress held its Thirteenth Annual Meeting in Bombay. One day of the Meeting was devoted to the discussion of cotton problems and to a visit to the Technological Laboratory. This visit proved very popular, about 300 members being present, most of whom took considerable interest in the details of the work being carried on.

(5) *Publications.*—Reference has already been made to the Bulletin which was published during the year on the " Results of

Spinning Tests on Standard Indian Cottons." This bulletin has met with a favourable reception and a considerable demand for it has taken place. A pamphlet has also been published showing the results of a comparative test on roller-ginned and saw-ginned Punjab-American 289F cotton. This pamphlet also has excited considerable interest.

As in the previous year a contribution has been made to the Bombay Cotton Annual giving a general discussion of the results obtained during the year.

A. JAMES TURNER,

Director, Technological Laboratory.

APPENDIX I.

(REVENUE DEPARTMENT.)

BOMBAY CASTLE, 10*th August* 1926.

Notification No. 3798/24.—Whereas, owing to the wide extension of the growing of similar high quality of cotton in areas I, II and III of the areas specified in Schedule I to Government Notification in the Revenue Department No. 535-A., dated 18th August 1923, it is no longer necessary to maintain the said areas as separate protected areas for the import of cotton into them by road;

Now, therefore, in exercise of the powers conferred by sub-section (1) of section 3 of the Cotton Transport Act, 1923 (III of 1923), the Government of Bombay is hereby pleased to cancel the said notification as far as it prohibits the import of cotton by road from the Olpad-Ankleshwar area, into the South-Surat area and the Surat area described in Schedule I to the said notification; provided that in the event of the cultivators being found to grow cotton of inferior quality hereafter in any of the said areas, this notification will be cancelled.

By order of the Government of Bombay (Transferred Departments).

G. A. THOMAS,
Chief Secretary to Government.

APPENDIX II.

OPINIONS RECEIVED FROM THE BOMBAY MILLOWNERS' ASSOCIATION.

I. "The previous improvement in Comptas has been kept up, but I have not seen any improvement in Westerns. We do not use Surats, Dharwar or Cambodias."

II. "There has been no improvement since last year in Surats. In fact cotton last year was slightly inferior. In Comptas and Dharwar, improvement has been maintained. But the Westerns show no improvement but have gone down in spinning qualities."

III. "We see no improvements in Westerns or Cambodias. We agree with the above views on Westerns. We do not use Northerns or Tinnevellies and are, therefore, unable to express any opinion. Improvements in Comptas and Surats has been maintained."

IV. "The application of the Act relates to the prevention of mixing growths of one district with those of another. In the Compta district we have no complaints though some short staple has been mixed with longer staple—but all Comptas. In Surats we experience no mixing though the cotton was not so good as the previous season's due to this crop generally being poorer. Cambodia and Tinnevellys were, in my opinion, a little better than the previous season's."

Westerns.—"I agree with the views expressed in No. II above.

V. "The Transport Act is working efficiently. Compta quality this year is the best we have had for several years. Cambodia and Karunganni styles are better than last year. The quality of Surat styles has been maintained. Westerns are worse than last year due most probably to unfavourable weather conditions."

VI. "I agree with No. V."

APPENDIX III.

FORT ST. GEORGE, *November* 18, 1925.
(G. O. Press No. 1657, Development.)

Notification under Section 3 *of the Cotton Transport Act,* 1923, (*III of* 1923), *as amended by Act No. XXXIV of* 1925.

No. 344.—Whereas it is necessary for the purpose of maintaining the quality and reputation of the cotton grown in the areas in the Madras Presidency mentioned in Schedule I hereto appended.

Now, therefore, in exercise of the powers conferred by subsection (1) of section 3 of the Cotton Transport Act, 1923 (III of 1923) as amended by Act No. XXXIV of 1925, the Government of Madras are hereby pleased to prohibit the import of cotton into the said areas by rail and sea save under and in accordance with the conditions of a license prescribed in this behalf subject, however, to the exception specified in clause (3) below.

(2) The Government of Madras are further pleased to prohibit, under sub-section (2) of section 3 of the said Act, the delivery to, and the taking of delivery by, any person, at any railway station situated in any of the protected areas and specified in Schedule II hereto appended, of any cotton when such cotton has been consigned from a railway station not situated in the said area unless such person holds the prescribed license for the import of cotton into the said area, subject, however, to the exception specified in clause (3) below.

(3) The transport of cotton lint into Tiruppur-Cambodia protected area as defined in Schedule I from the districts of North Arcot, South Arcot, Chittor and Chingleput and from the Atur, Dharmapuri, Hosur, Krishnagiri, Omalur, Salem and Uttangarai taluks of Salem district is exempted from the operation of clauses (1) and (2) and permitted without restriction.

SCHEDULE I.—PROTECTED AREAS.

I. *The Northerns and Westerns area*—Consisting of the districts of Anantapur, Bellary, Cuddapah and Kurnool.

II. *The Tiruppur-Cambodia area*—Consisting of the district of Coimbatore, the Karur, Musiri and Kulittalai taluks of Trichinopoly district, the Namakkal, Tiruchengodu and Rasipur taluks of Salem district and that portion of the Madura district lying to the north and west of the Vaigai river.

III. *The Tinnevelly area.*—Consisting of the district of Tinnevelly and that portion of the districts of Ramnad and Madura lying to the east and south of the Vaigai river.

SCHEDULE II.—RAILWAY STATIONS.

I. *The Northerns and Westerns area.*—All stations from Kottur to Hospet, both inclusive, from Rayadrug to Bellary, both inclusive, from Hospet to Guntakal, both inclusive, from Guntakal to Hindupur, both inclusive, from Guntakal to Tungabhadra river, both inclusive, from Dharmavaram to Tanakallu, both inclusive, from Guntakal to Cumbum, both inclusive, on the Guntakal-Bezwada line, from Dhone to Kurnool, both inclusive, and from Guntakal to Settikunta, both inclusive.

II. *The Tiruppur-Cambodia area.*—All stations from Podanur to Kallar, both inclusive, Madukarai and all stations from Podanur to Pollachi, both inclusive, from Podanur to McDonald's Choultry, both inclusive, from Madura bridge to Samudram, both inclusive, and from Erode to Marudur, both inclusive.

III. *The Tinnevelly area.*—All stations from Maniyachi to Madura, both inclusive, from Maniyachi to Tenkasi, both inclusive, from Maniyachi to Tuticorin, both inclusive, from Tinnevelly to Tiruchendur, both inclusive, and from Madura to Mandapam, both inclusive.

APPENDIX IV.

LIST OF PRESS MARKS.

Name of Presidency or Province.	Press Mark.
Madras Presidency	M.
Bombay „	B.
Sind „	S.
Bengal „	L.
United Provinces	U.
Punjab	P.
Central Provinces	C.
Bihar and Orissa	Q.
Assam	A.
North-West Frontier Province	F.
Ajmer-Merwara	J.
Delhi	D.

Name of State.	Press Mark.	Name of State.	Press Mark.
Alipura	AP.	Balasinor	BA.
Alwar	AL.	Banganapalle	BG.
Aundh	AU.	Banswara	BW.
Bahawalpur	BH.	*Baroda	BS.

*With the addition of a third letter denoting the district thus:—
BSB. Baroda State, Baroda District; BSA. Baroda State, Amreli District; BSK. Baroda State, Kadi District; and BSN. Baroda State, Navsari District.

Name of State.	Press Mark.
Barwani	BR.
Bharatpur	BT.
Bhavnagar	BN.
Bhopal	BP.
Bilaspur	BL.
Bundi	BU.
Cambay	CA.
Chhota Udaipur	CU.
Cochin	CN.
Cutch	CT.
Datia	DT.
Dewas, J. B.	DJ.
Dewas, S. B.	DS.
Dhar	DR.
Dholpur	DH.
Dhrangadhra	DG.
Faridkot	FK.
Gondal	GN.
Gwalior	GL.
Hyderabad	HD.
Idar	ID.
Indore	HS.
Jaipur	JP.
Jamkhandi	JK.
Jaora	JR.
Jath	JA.
Jetpur	JT.
Jhabua	JH.
Jhalawar	JL.
Jind	JD.
Jodhpur	JO.
Junagad	JN.
Kalsia	KA.
Kapurthala	KP.
Kashmir	KS.
Katosan	KO.
Khairpur	KR.
Khilchipur	KL.
Kishengarh	KG.
Kolhapur	KH.
Kotah	KT.
Limbdi	LM.
Lokhtar	LK.
Malerkotla	MK.
Manawadar	MN.
Marwar	MA.
Mewar	ME.
Miraj, J. B.	MJ.
Miraj, S. B.	MS.
Morvi	MV.
Mudhol	MD.
Mysore	MY.
Nabha	NB.
Narsingarh	NG.
Nawanagar	NA.
Palanpur	PL.
Palitana	PN.
Partabgarh	PG.
Patiala	PT.
Porbandar	PB.
Rajgarh	RG.
Rajpipla	RP.
Rampur	RM.
Rutlam	RL.
Sachin	SA.
Sailana	SL.
Sangli	SN.
Savanur	SV.
Shahpura	SH.
Sitamau	SI.
Tonk	TK.
Vankaner	VK.
Wadhwan	WA.

APPENDIX V.

COTTON FINANCE ENQUIRY.

Summary of the Reports on the Khandesh, Berar and North Gujerat Investigations.

A copy of the questionnaires for the village and market enquiries is given below. The detailed results are too bulky for reproduction but the abstract tables embody much of the information obtained.

Questionnaires.

Village Investigations.

Information to be obtained from each Cotton Grower.

Village.....

Name of Cotton Cultivator.....

Is he a Proprietor or Tenant ?.....

Total area of his holding.....

Area under Cotton.....

(Survey numbers).....

Anticipated yield of *kapas*.....

Variety.....

1st Period.

Information between.

1. Has any advance been taken for cultivation up-to-date ? .....

.....

2. If so, how much ?.....
3. What amount has been signed for ?.....
4. Rate of interest.....
5. Source of advance (Co-operative Society, Sowcar, cotton trader) .....

6. Is there any bond to sell *kapas* through the lender, or to the lender ?.....

or

7. Is the crop already sold, and the price fixed either on acreage or on weight ?.....

If so, to whom ?.....

and

for what price ?.....

2ND PERIOD.

Information between

1. How much *kapas* has been picked so far—approximately ?.....

.....

2. Has any advance been taken on this *kapas* ?.....

3. If so, from whom ?.....

and under what conditions ?.....

.....

4. Has any *kapas* been actually sold ?.....

If so, to whom ?.....

and where ?.....

and when ?.....

Was it sold ? through a dalal or arti ?.....

5. Has the money been received for this *Kapas* ?.....

6. What was the rate ?.....

7. What was the money actually received ?.....

8. Where was the *kapas* delivered ?.....

How far away ?.....

Who paid for cartage ?.....

.....

3rd Period.

Information between

1. What was the quantity of your whole crop of *kapas* ?
2. How much now remains with you ?
3. Have you received the whole money due on the *kapas* sold ?
4. How many carts were sold locally, and how many were carted to the market and sold there ?

   (If quantities small, state weights).

   If sold in the market, was it sold through a broker ?

   Was the cotton sold outright or deposited with an arti or Bania for sale ?
5. Did you ascertain the market rates before selling ? If so, how ?
6. Has an advance been taken on the *kapas* remaining with you ?
7. If so, from whom and under what conditions ?
8. What rate are you now offered for this *kapas* locally ? (Market rates can be found separately).

General.

(Such information as can be obtained about difficulties in marketing, in finance, and in holding for higher prices).

1. Would an open cotton market with open prices be any advantage to you ? If so, how ?
2. Is there any difficulty in knowing the rate at which your agent sells your *kapas* and in recovering the full money ?
3. Are deductions made from the price ?
4. If so, what are they said to be for—and what rate is said to be charged ?
5. If you take *kapas* to market, and cannot get a good rate for your cotton, what do you do with it ?

General Information to be obtained for each Market.

1. How is the market managed ? Attach a copy of any local bye-laws or rules regulating trading in *kapas* or cotton.
2. Is there any local Market Committee of any kind ; if so, who are the members ? What are their occupations ?
3. Describe in detail how sales are conducted.
4. Can cultivators bringing *kapas* to the market sell direct or must they employ brokers ?
5. What is the system of buying ? Do buyers buy direct or employ brokers ?
6. Do brokers and arhatyas act for *both* buyers and sellers ?
7. Do buyers give advances against *kapas* deposited for sale ; if so, what percentage of the value and at what interest ?
8. If daily (or opening) rates are fixed, how is this done, and how are they announced ?
9. Are Bombay rates posted in the market regularly ? If so, what rates and how obtained ?
10. Are there any arrangements for storage in the market ? Is *kapas* stored in arti's shops, or godowns, or in ginning factories, *on sellers' account* ?
11. Do the market records show daily arrivals ? Compile a statement of daily and monthly arrivals for last season from the records available and of prices for the same dates.
12. State the system of weighment in use. Are there any complaints from cultivators about weighments ; if so, what ?
13. How is the weighman paid and how much ? By whom is he employed ?
14. What are the allowances and deductions customary in the market ? Is there any complaint from sellers that these are unfair ?

1. KHANDESH INVESTIGATIONS.

(*a*) Village Enquiry—West Khandesh.

Ten villages were selected for these enquiries, six in West Khandesh and four in East Khandesh. Detailed replies were received from 813 cultivators out of a total of 851. A few replies were incomplete, but most of the 38 cultivators from whom complete replies were not received were either absent or have grown no cotton.

For West Khandesh the following general conclusions are possible :—

The periods for recording information were modified as follows:—

First period	.. ..	September 24th to October 14th.
Second period	.. ..	October 20th to November 6th. (For West Khandesh only).
Third period	.. ..	January 21st to February 20th.

The last change has proved a mistake as, for various reasons which will be discussed later, a good deal of the cotton was sold between the beginning of December and the middle of January. In any future enquiry probably it would be desirable that the village observations should be more continuous.

(*i*) *Method of sale.*

A few of the larger growers have had their *kapas* ginned and have sold ginned cotton and state that this is the most profitable method of sale. A considerable proportion of cultivators in some villages have sold their *kapas* in established markets such as Dhulia and Nandurbar and, as will be seen from the market results, the sales by cultivators in such markets from an appreciable percentage of the whole. In all villages a good deal of the *kapas*, and in some practically all has been sold locally either to village traders or to traders from adjoining villages who visited the villages from time to time for the purchase of *kapas*. Such peripatetic buyers in some cases re-sold the *kapas* in the larger markets, in other cases to ginners. On the question as to whether open markets are an advantage the opinions of cultivators naturally differ. Many are in favour of them as they say that weighments are more accurate, the real prices are obtained and money is paid the same day which is not the case

when kapas is sold in villages. The objections to the larger markets are :—

(*a*) The cost of cartage—this is not mentioned by many.

(*b*) The kapas weighs less at the market than in the villages by a few seers per cart. On this point the market enquiries have shown that at Dhulia the last bundle of kapas (less than ½ maund) is never weighed accurately and is not paid for in full. At Amalner a fixed deduction of 5 seers per cart is made.

(*c*) The principal complaint is that the cultivator does not, as a rule, get the rate which is settled in the market but, after weighing has commenced at the ginning factory, a dispute arises about quality and a reduction in the rate is frequently made. These " Vandas " are strongly objected to by a number of cultivators. The recorded reductions range from 4 annas to Rs. 3 per maund. Some are doubtless justified owing to moisture, low ginning percentage or black leaf, but the frequency of small reductions indicate that there is real ground for complaint.

(*ii*) *Finance.*

In villages where there are co-operative societies it is probable that much better records of cultivator's loans have been obtained. The advances are not heavy but are very substantial. Some cultivators complain that the societies do not advance sufficient money and it will be observed that a number of members of the co-operative societies have also borrowed from sowkars. It is difficult to deal with this point in any abstract, but the examination of the detailed figures shows that, on the whole, co-operative societies have advanced reasonably large amounts.

(*iii*) *Cultivator's borrowings.*

The summaries give a good deal of information as to the extent of the borrowings. No attempt at a general enquiry into agricultural indebtedness was made. Where there is no co-operative society the interest on cash loans varied from 18 to 24 per cent. A very large number of cultivators have taken cotton seed on credit in amounts which suggest that a portion of it was required for cattle. The rates charged represent high rates of interest (60 per cent. nearly).

Advances recorded in the second period, (*i.e.*, advances taken subsequent to cultivation advances) are very small, both in number and the amount. Very few instances of actual advances against kapas are recorded. No instances of the sale of the crop before it is ready have been recorded. The money lenders are not purchasers of kapas to any considerable extent. There is no indication that the cultivators have been hampered by indebtedness in disposing of their kapas to the best advantage. Some replies state that cultivators could not hold their kapas after the end of December or the middle of January. There are not many such replies and such as there are are discounted by the fact that the other replies state that kapas was sold either because rates had fallen or because the end of the season was approaching.

(iv) Sales.

The percentage of kapas sold in the second period to kapas picked up to that date is on the whole surprisingly small and the number of cultivators who held up the whole of their kapas until December or January is surprisingly large. Those who sold their kapas promptly this year clearly obtained much better rates than those who accumulated the whole of their cotton and sold it later. It is significant that the village which shows the highest percentage of kapas sold during the early period is also the village which sold most kapas in the market (Dhulia). One thing at any rate is clear. Cultivators on the whole were of opinion that they would get better prices by holding their kapas and the large majority did hold either the whole or a substantial percentage of their crop. A number of sales of the cultivator's whole crop are recorded as late as the end of January or the beginning of February. Hence the assumption appears to be justified that there is no pressure to sell owing to lack of finance. No facilities exist for cultivators taking advances against kapas deposited for sale and there does not seem any indication that they are wanted. What does seem to be needed is some elementary regulation of the larger markets.

Even under existing conditions the rates obtained in the markets are on the whole considerably higher than was paid in villages even allowing for the cost of carting. A fully detailed comparison has not been possible because the actual dates of sale had not been recorded in a sufficient number of cases. But the general conclusion

is that there is a clear indication that cultivators who have sold their kapas in the larger markets have obtained better rates.

General Conclusions.

For West Khandesh the following general conclusions seem to be justified :—

(1) A large number of cultivators have kept *all* their kapas unsold from the end of October until various dates in December and January. Of the remainder a number sold a certain proportion earlier and benefited by doing so. Comparatively few sold at the first opportunity.

(2) Such information as has been collected indicates that indebtedness, on the whole, is moderate. There is no indication that the cultivator's freedom in selling his kapas has been restricted by indebtedness.

(3) The borrowings after the cultivation periods are small. There is clearly no pressure to sell.

(4) There seems to be little demand for facilities for depositing kapas against advances.

(5) It would seem from the evidence before us that regulated markets would assist the cultivator to get a better price for his kapas. Many cultivators object to take advantage of the present markets because they state that vandhas or disputes prevent them from getting a fair price.

Village Enquiry—East Khandesh.

Four villages from East Khandesh were selected and the records of two of these, both very large villages, have been gone through in detail with the investigator. The periods of enquiry were as follows :—

——	Mamurabad.	Kandari.	Tamaswadi and Devgaon.
1st Period ..	September 30th to October 8th.	September 24th to 28th.	September 19th to October 7th.
2nd Period ..	October 30th to November 5th.	November 12th to 14th.	October 25th to November 25th.
3rd Period ..	February 8th to 20th and March 4th.	January 5th to 8th and February 28th.	January 20th to February 15th.

I. Method of Marketing.

Twenty-six cultivators had their cotton ginned and sold lint of whom twenty were from one village. Sales in markets are much less common than in West Khandesh, most of the sales being made locally to travelling traders. Three villages disposed of all their kapas in this manner; in the fourth village only 20 cultivators out of 180 sold *kapas* in the market and 20 sold ginned cotton.

As might be expected there are far fewer replies about the advantages or otherwise of open markets. In the one village that had some experience of markets 37 replies were in favour of open markets owing to the greater competition; 11 recorded deductions on "vandhas" varying from two annas to Rs. 1-4 per maund; 4 had no trouble. Thirteen stated that if the *kapas* rate in the market was unfavourable they got their kapas ginned and stored their cotton—one did so. There seem to be no complaints about village weighments but in many cases there was *great* delay—varying from 2 weeks to 2 months—in payments.

Borrowings.

The cultivator's borrowings during the cultivation period are very similar to those in West Khandesh but are somewhat heavier. As in West Khandesh borrowings recorded during the 2nd period, *i.e.*, after picking had begun were quite nominal. There were no borrowings against kapas deposited. Again there are no indications that the cultivators were tied to the money lenders or hampered by their borrowings in disposing of their kapas to advantage.

An additional summary for Mamurabad village has been prepared showing the amounts which some tenants are paying for rented land. Most of them are also proprietors of part of the land they cultivate. The rents are very heavy (Rs. 20 to Rs. 35 per acre) compared to the assessment (Rs. 4 to Rs. 5) and probably only a man who owns part of his land could afford to pay them. In this village rents are paid for the year *in advance*, a fact which explains some of the heavy borrowings.

Sales.

In the two large villages Mamurabad and Kandari three distinct sale periods can be observed. The early sales, *i.e.*, before November 5th were trivial although half the crop had been picked.

In the next period ending about November 25th, 47 out of 170 cultivators in Mamurabad and 79 out of 93 in Kandari sold all or most of their kapas, the percentage of the total crop so sold in the 2 villages being 34 and 79. At the next period, January 6th to 15th, 114 cultivators in Mamurabad and 14 in Kandari sold all their crop.

In Tamaswadi and Devgaon also first period sales were nominal and in the latter village most of the kapas was sold about January.

The cultivators' replies show that they can and did hold up their kapas until January in the hope of getting better prices ; this is 3 months after harvest. There is clearly little pressure to sell.

Sales of the standing crop in advance are again nil. A few very small " Jalap " sales of trifling quantities are recorded. These seem to be more a matter of custom than of money.

No detailed comparison is possible of the rates obtained from village sales and sales in the market but the indications are that in the case of Tamaswadi and Kandari the rates obtained in the villages compared pretty well with market rates. For Devgaon we have a fairly good comparison with Dhulia market rates. The rates at Dhulia were Rs. 21-4 to Rs. 21-8 per maund, whilst 16 per cent. of the Devgaon cultivators got Rs. 20 to Rs. 21 locally and 45 per cent. Rs. 19 to Rs. 20, *i.e.*, Re. 1 to Rs. 2 down. Mamurabad cultivators got about one rupee below Jalgaon market rates for November-December sales ; for December–January sales they got market prices for Red Leaf cotton but were heavily penalised (Rs. 2 to Rs. 3 per maund of *kapas*) for black leaf kapas.

Generally speaking the East Khandesh results confirm the conclusions provisionally adopted for West Khandesh.

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

WEST KHANDESH.

P=Proprietor. T=Tenants, including those cultivating partly as tenants and partly as proprietors.

Number of cultivators in each group.

Advances Rs. per acre ..		No advance.	Rs. 1–5	Rs. 6–10	Rs. 11–15	Rs. 16–20	Rs. 21–25	Rs. 26–30	Rs. 31–40	Over Rs. 40	Number of cultivators.
Gorana	P. ..	10	2	2	6 (*a*)	2	7	2	4	3 (*b*)	38
	T. ..	0	0	0	3	2	2	5	1	5 (*c*)	18
	Total ..	10	2	2	9	4	9	7	5	8	56

REMARKS.—(*a*) One had further unascertained borrowings for household purposes.
(*b*) Rs. 81, Rs. 62 and Rs. 50 respectively.
(*c*) Rs. 140, Rs. 83, Rs. 55, Rs. 50 and Rs. 47 respectively.

Varpada.	P. ..	4	1	3	3	5	3	1	1	4	25
	T. ..	0	0	2	4	0	3	1	0	0	10
	Total ..	4	1	5	7	5	6	2	1	4(*a*)	35

REMARKS.—(*a*) Rs. 111, Rs. 49, Rs. 46 and Rs. 46 per acre respectively.

Ajanda Bk.	P. ..	7	0	0	3	4	4	4	8	8 (*a*)	38
	T. ..	2	0	0	1	2	4	3	1	3 (*b*)	16
	Total ..	9	0	0	4	6	8	7	9	11	54

REMARKS.—(*a*) Rs. 89, Rs. 82, Rs. 58, Rs. 57, Rs. 51, Rs. 50, Rs. 50 and Rs. 50 per acre respectively.
(*b*) Rs. 66, Rs. 58, and Rs. 48 per acre respectively.

Sonsheiu.	P. ..	1	15	8	2	1	1	1	0 (*a*)	0	29
	T. ..	0	7	1	1	0	0	0		0	9
	Total ..	1	22	9	3	1	1	1	0	0	38

REMARKS.—(*a*) No borrowings above Rs. 30 per acre; most of the 22 small borrowings are for seed on credit.

Vaghoda.	P. ..	3	1	2	2	6	6	2	2	2 (*a*)	26
	T. ..	3	0	2	2	0	2	1	0	0	10
	Total ..	6	1	4	4	6	8	3	2	2	36

REMARKS.—(*a*) Rs. 53 and Rs. 52 per acre respectively.

Pimprad.	P. ..	6	7	6	8	7	1	0	2	0	37
	T. ..	1	5	6	1	0	0	0	0	0	13
	Total ..	7	12	12	9	7	1	0	2	0	50
West Khandesh. All cultivators.	P. ..	31	26	21	24	25	22	10	17	17	193
	T. ..	6	12	11	12	4	11	10	2	8	76
	Total ..	37	38	32	36	29	33	20	19	25	269
Percentage ..		14	15	12	13	11	12	7	7	9	

Advances expressed as a percentage of the money realized from the sale of cotton.

West Khandesh.

Number of cultivators in each group.

Percentages.		0	1–25 %	26–50 %	51–75 %	76–100 %	101–150%	151–200%	Over 200%		Remarks.
Gorana.	P. ..	10	3	4	10	6	4	0	1(*a*)	38	(*a*) 357%
	T. ..	0	0	4	5	3	6	0	0	18	
	Total ..	10	3	8	15	9	10	0	1	56	
Varpada	P. ..	4	4	8	7	0	1	0	1(*a*)	25	(*a*) 215%
	T. ..	0	4	4	1	1	0	0	0	10	
	Total ..	4	8	12	8	1	1	0	1	35	
Ajanda Bk.	P. ..	7	0	8	7	8	6	1	1(*a*)	38	(*a*) 241%
	T. ...	2	0	3	5	4	2	0	0	16	
	Total ..	9	0	11	12	12	8	1	1	54	
Sonshelu.	P. ..	3	20	5	1	0	0	0	0	29	
	T. ..	0	7	1	0	1	0	0	0	9	
	Total ..	3	27	6	1	1	0	0	0	38	
Vaghoda.	P. ..	3	2	8	3	2	6	1	1	26	
	T. ..	3	0	2	3	2	0	0	0	10	
	Total ..	6	2	10	6	4	6	1	1	36	
Pimprad.	P. ..	7	11	11	5	2	1	0	0	37	
	T. ..	1	9	3	0	0	0	0	0	13	
	Total ..	8	20	14	5	2	1	0	0	50	
West Khandesh. All cultivators.	P. ..	34	40	44	33	18	18	2	4	193	
	T. ..	6	20	17	14	11	8	0	0	76	
	Total ..	40	60	61	47	29	26	2	4	269	
Percentage		15	22	23	17	11	9	1	2		

P.=Proprietor. T.=Tenants, including those cultivating both as proprietors and tenants.

On all the cultivators in the six villages.

37% had borrowed less than 25% of the value of the crop.

60% „ „ „ „ 50% „ „ „ „

23% „ „ more than 75% „ „ „ „

12% „ „ „ „ 100% „ „ „ „

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

East Khandesh.

P.=Proprietor.

T.=Tenants including those cultivating partly as tenants and partly as proprietors.

Number of cultivators in each group.

Advances Rs. per acre.	No advance.	Rs. 1–5	Rs. 6–10	Rs. 11–15	Rs. 16–20	Rs. 21–25	Rs. 26–30	Rs. 31–40	Over Rs. 40	Number of cultivators
Mamurabad. P.	49	0	2	4	4	3	3	5	9 (*a*)	79
T.	38	1	3	12	8	8	5	14	13 (*b*)	102
Total ..	87	1	5	16	12	11	8	19	22	181

Advances expressed as a percentage of the money realized from the sale of cotton.

East Khandesh.

P.=Proprietor.

T.=Tenants including those cultivating both as proprietors and tenants.

Number of Cultivators in each group.

Percentages.	0	1–25 %	26–50 %	51–75 %	76–100 %	101–150 %	151–200 %	Over 200 %	Number of cultivators.
Mamurabad. P. ...	49	6	6	3	5	5	1	4	79
T. ..	38	7	15	10	8	12	7	5	102
Total ..	87	13	21	13	13	17	8	9	181

REMARKS.—(*a*) Rs. 75, Rs. 50, Rs. 100, Rs. 67, Rs. 50, Rs. 90, Rs. 52, Rs. 106 and Rs. 106 per acre respectively.

(*b*) Rs. 64, Rs. 44, Rs. 53, Rs. 44, Rs. 51, Rs. 50, Rs. 66, Rs. 73, Rs. 57, Rs. 375, Rs. 76, Rs. 52, Rs. 74 per acre respectively.

(*c*) Two circumstances affect the borrowings in this village :—

(1) The rents recorded for leased land are high and these are paid in advance.

(2) The area under groundnuts is approximately half the cotton area and hence the recorded advances really relate to *two* cash crops instead of one.

(*d*) The number of cultivators (87 out of 181) who have borrowed nothing is very high.

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

East Khandesh.

P.=Proprietor.

T.=Tenants including those cultivating partly as tenants and partly as proprietors.

Number of Cultivators in each group.

Advances Rs. per acre.	No advance.	Rs. 1–5	Rs. 6–10	Rs. 11–15	Rs. 16–20	Rs. 21–25	Rs. 26–30	Rs. 31–40	Over Rs. 40	Number of cultivators.
Kandari. P.	10	0	3	4	5	10	6	7	5	50
T.	5	4	2	5	8	4	7	8	2	45
Total ..	15	4	5	9	13	14	13	15	7	95

Advances expressed as a percentage of the money realized from the sale of cotton.

East Khandesh.

P.=Proprietor.

T.=Tenants including those cultivating both as proprietors and tenants.

Number of Cultivators in each group.

Percentage.	0	1–25 %	26–50 %	51–75 %	76–100 %	101–150 %	151–200 %	Over 200 %	Number of cultivators.
Kandari. P.	10	0	3	8	12	8	4	5	50
T.	5	2	5	7	7	8	5	6	45
Total ..	15	2	8	15	19	16	9	11	95

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

East Khandesh.

P.=Proprietor.

T.=Tenants including those cultivating partly as tenants and partly as proprietors.

Number of cultivators in each group.

Advances Rs. per acre.		No advance.	Rs. 1–5	Rs. 6–10	Rs. 11–15	Rs. 16–20	Rs. 21–25	Rs. 26–30	Rs. 31–40	Over Rs. 40	Number of cultivators.
Tamaswadi.	P. ..	23	4	10	12	17	16	14	29	28 (*a*)	153
	T. ..	2	2	2	3	1	4	1	3	7 (*b*)	25
	Total ..	25	6	12	15	18	20	15	32	35	178

REMARKS.—(*a*) Rs. 67, Rs. 48, Rs. 89, Rs. 55, Rs. 57, Rs. 53, Rs. 72, Rs. 67, Rs. 50, Rs. 80, Rs. 80, Rs. 44, Rs. 44, Rs. 66, Rs. 92, Rs. 67, Rs. 66, Rs. 50, Rs. 133, Rs. 58, Rs. 44, Rs. 133, Rs. 63, Rs. 113, Rs. 67, Rs. 50, Rs. 47 and Rs. 114 per acre respectively.

(*b*) Rs. 83, Rs. 47, Rs. 93, Rs. 59, Rs. 133, Rs. 50, Rs. 54 per acre respectively.

There is a considerable area of groundnuts in this village, indeed some cultivators grew no cotton. This doubtless explains a number of the larger loans.

Advances expressed as a percentage of the money realized from the sale of cotton.

East Khandesh.

P.=Proprietor.

T.=Tenants including those cultivating both as proprietors and tenants.

Number of cultivators in each group.

Percentage.		0	1–25 %	26–50 %	51–75 %	76–100 %	101–150 %	151–200 %	Over 200 %	Number of cultivators.
Tamaswadi.	P. ..	23	8	13	17	17	34	11	30	153
	T. ..	2	1	0	3	2	4	8	5	25
	Total ..	25	9	13	20	19	38	19	35	178

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

East Khandesh.

P.=Proprietor.

T.=Tenants including those cultivating partly as tenants and partly as proprietors.

Number of cultivators in each group.

Advances Rs. per acre.		No advance.	Rs. 1–5	Rs. 6–10	Rs. 11–15	Rs. 16–20	Rs. 21–25	Rs. 26–30	Rs. 31–40	Over Rs. 40	Number of cultivators.
Devgaon.	P.	12	6	1	8	5	10	4	12	23 (*a*)	81
	T.	2	0	0	1	1	2	1	1	8 (*b*)	16
	Total ..	14	6	1	9	6	12	5	13	31	97

REMARKS.—(*a*) Rs. 64, Rs. 72, Rs. 74, Rs. 51, Rs. 43, Rs. 82, Rs. 53, Rs. 91, Rs. 92, Rs. 97, Rs. 75, Rs. 58, Rs. 49, Rs. 50, Rs. 53, Rs. 46, Rs. 47, Rs. 46, Rs. 51, Rs. 44, Rs. 48, Rs. 50 and Rs. 48 per acre respectively.

(*b*) Rs. 60, Rs. 49, Rs. 56, Rs. 55, Rs. 101, Rs. 75, Rs. 63 and Rs. 68 per acre respectively.

Advances expressed as a percentage of the money realized from the sale of cotton.

East Khandesh.

P.=Proprietor.

T.=Tenants including those cultivating both as proprietors and tenants.

Number of cultivators in each group.

Percentage.		0	1–25 %	26–50 %	51–75 %	76–100 %	101–150 %	151–200 %	Over 200 %.	Number of cultivators.
Devgaon.	P.	12	3	8	7	11	10	10	20	81
	T.	2	0	0	1	2	3	2	6	16
	Total ..	14	3	8	8	13	13	12	26	97

CONSOLIDATED STATEMENT.

Advances taken by Cultivators expressed in Rupees per acre of cotton cultivation.

EAST KHANDESH.

P.=Proprietor.
T.=Tenants including those cultivating partly as tenants and partly as proprietors.

Number of cultivators in each group.

Advances Rs. per acre.		No advance	Rs. 1-5	Rs. 6-10	Rs. 11-15	Rs. 16-20	Rs. 21-25	Rs. 26-30	Rs. 31-40	Over Rs. 40	Number of cultivators.
MAMURABAD.	P. ..	40	0	2	4	4	3	3	5	9	79
	T. ..	38	1	3	12	8	8	5	14	13	102
	Total ..	87	1	5	16	12	11	8	19	22	181
KANDARI.	P. .	10	0	3	4	5	10	6	7	5	50
	T. ..	5	4	2	5	8	4	7	8	2	45
	Total ..	15	4	5	9	13	14	13	15	7	95
TAMASWADI.	P. ..	23	4	10	12	17	16	14	29	28	153
	T. ..	2	2	2	3	1	4	1	3	7	25
	Total ..	25	6	12	15	18	20	15	32	35	178
DEVGAON.	P. ..	12	6	1	8	5	10	4	12	23	81
	T. .	2	0	0	1	1	2	1	1	8	16
	Total ..	14	6	1	9	6	12	5	13	31	97
GRAND TOTAL ..		141	17	23	49	49	57	41	79	95	551
PERCENTAGE ..		26	3	4	9	9	10	7½	14½	17	100

It will be seen that cultivators' recorded borrowings *per acre of cotton* are higher in East Khandesh than in West Khandesh. The percentage of cultivators who have taken no advances is higher in East Khandesh than the percentage of cultivators who have not borrowed more than Rs. 5 per acre so that the difference is not significant and it could be accounted for by incomplete information as to seed obtained on credit. The higher percentage of cultivators in East Khandesh who have taken advances of over Rs. 25 per acre is clearly due to the greater importance of groundnut cultivation in East Khandesh. In West Khandesh the cotton area is 52·8 per cent. of the whole cultivated area in the villages studied; for the East Khandesh villages the percentage is only 45.

(*b*) *Market Enquiry Summary.* *

The village summaries deal with the number of cultivators from the villages studied who used the larger markets. The only markets† that need be discussed are the 9 referred to in the summary. Many other places were found not to be *Kapas* markets but places with ginning factories where ginned cotton is sold by traders.

2. It will be seen from the summary that the proportion of carts brought in by cultivators is large. In the case of Dhulia the number of carts arriving was far larger than could be dealt with by the investigators and they obtained records for 50 carts each day. Assuming that the 300 carts recorded were fairly representative (the system adopted makes it probable that they were), cultivators brought 61 per cent., traders 39 per cent. In the Amalner market also the number of carts was too large for a complete record, cultivators' carts here represent 27 per cent. and traders' 73 per cent. In the other markets every cart appears to have been recorded. At Dondaiche (3 days) 63 out of 74 carts were brought by *cultivators*, 85 per cent. At Sherpur 61 carts out of 73 (84 per cent.) were brought by cultivators. At Nandurbar 22 out of 53 (44 per cent.) were cultivators' carts and at Pachora 27 out of 36 (75 per cent.). At Jalgaon on the other hand only 6 carts out of 49 (12 per cent.) belonged to growers, the remainder being brought by merchants. For Maheji no conclusion can be drawn as only 5 carts were recorded.

3. The answers to the general information questions for these markets are summarised below. They are all very similar. There are no market committees and no bye-laws or rules. At Jalgaon the municipality has provided (free) an open space which serves as a cotton market. At Amalner the municipality has provided an open space and a small building and charges 2 annas per cart. At Maheji and Pachora there is no semblance of a market yard, all transactions seem to take place at ginning factories. At Pachora however a Co-operative Sale Society, which is practically a co-operative commission shop employing one Adhatya to deal with members' produce, deals with about 4,000 carts per annum. At Sherpur there is an association of *traders* who adjudicate on disputes (Vandas).

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* For questionnaire see page 67.

† Shahada is mentioned in the investigator's report as mainly a lint market but the detailed replies indicate that it is also a *Kapas* market earlier in the season.

Q. 3.—The system of sales everywhere is much the same. Carts collect in the early morning, dalals show samples to merchants, bids are made under cover and the seller accepts a rate. *No memorandum is given to the seller at this stage.* The carts are then removed to the various ginning factories where weighment takes place and often the real bargaining. Here a memorandum of the weight and rate is given on which the cultivator is paid. Allowances are frequently claimed on the grounds that the cotton is not up to sample, or is damp, or has a low ginning percentage. Such claims are made *after weighment has begun* and usually the cultivator has no option but to accept the new rate. The records of such allowances is imperfect as, in many cases, only the final rate has been recorded. Nevertheless the number of cases of reductions of annas 4 to 8 per maund (say 1 to 2½ per cent.) are so large that it seems clear that the buyer generally squeezes some allowance out of the cultivator. There are also some instances of much bigger deductions as much as Rs. 3 per maund (8 per cent.).

This is the principal complaint of the cultivators against the present markets. It can only be remedied by the constitution of market committees and the introduction of definite market rules. Payments appear to be promptly made; this is substantiated by the individual village replies.

Q. 4.—Sellers in all of these markets except Maheji must employ a broker: they cannot sell direct. At Maheji the gin owners are said to act for the seller.

Q. 5.—In Dhulia, Nandurbar and Amalner Indian firms buy direct: foreign firms employ Adhatyas. Buyers' brokers are not required at Pachora, but the only Kapas transactions at Pachora are those made through the co-operative society, otherwise Pachora is a ginned cotton market. In the other markets buyers employ brokers; at Shahada buyers have their own brokers *but* do not pay commission on Kapas purchases.

Q. 6.—Yes, at Jalgaon, Dondaiche and Sherpur brokers act for both buyer and seller: at the other markets for seller only.

Q. 7.—Dondaiche, Sherpur and Nandurbar—no advances given. At Shahada ginners advance 50-75 per cent. against Kapas deposited for ginning. Interest 7½ per cent. At Jalgaon, Pachora and Maheji

gin-owners advance money on Kapas deposited in the ginning factory up to 50-75 per cent. of its value charging interest at 6 to 12 per cent. according to the standing of the borrower. At Dhulia and Amalner Adhatyas advance up to 75 per cent. against Kapas delivered to ginning factories. Interest 9 to 12 per cent. At Amalner and in East Khandesh generally ginners finance traders in order to attract business. Ginners at Dhulia are buyers but do not make advances. At none of these markets are advances made to cultivators against Kapas deposited for sale.

Q. 8.—Buyers calculate the rates from Bombay telegraphed prices. No system of posting rates in the markets. In all cases the cultivator is dependent on buyers or dalals for information about rates.

Q. 9.—Bombay rates are not posted in any of the markets.

Q. 10.—There is no provision for storage at any of the markets. At Dhulia and Nandurbar merchants and dealers can get godown accommodation in the ginning factories and it is reported that factories are increasing their storage accommodation. At other centres the only storage is in the open in ginning factory compounds. At Amalner and Jalgaon limited godown accommodation in ginning factories has been provided recently but is still insufficient.

Q. 11.—At none of the markets are any proper records of arrivals and prices maintained. The approximate arrivals are reported to be as follows :—

Dhulia	70,000–90,000 bales serves a radius of 50–60 miles.
Nandurbar ..	15,000–19,000 bales (two-thirds Khandesh, one-third Broach).
Shahada	5,000–7,000 bales.
Sherpur	20,000–25,000 ,,
Dondaiche ..	5,000–7,000 ,,
Pachora	No record except for Co-operative Society (4,000 carts, say 2,500 bales).
Amalner ..	40,000 bales in a good season.
Jalgaon	20,000–25,000 bales.
Maheji	20,000 bales in a good year ; this year 7,000 bales.

Q. 12.—Weighments in the West Khandesh markets are made in the ginning factories. Avery Beam balances in half maund lots. On the whole there is little complaint about weighments except that the last bundle (less than ½ maund) is not actually weighed and a deduction is made—especially at Dhulia. At Amalner the buyer takes a fixed allowance of 5 seers per cart. In the East Khandesh markets Amalner, Pachora, Jalgaon and Maheji weighments are made on platform balances and there are some complaints that cultivators distrust these. The detailed replies show that in many cases the market weights tallied quite well with the village rates, in other cases they were a few seers lower. Many cultivators consider that they lose from 2 to 8 seers per cart as a rule, others hold that market weights are better. Cultivators complain of weighments at Nandurbar and of the late time (5 p.m.) at which they are commenced. At all other markets cultivators are said to get their money the same evening without difficulty.

Q. 13.—*Weighment.*—

Dhulia	Employed by broker or Adhatya on behalf of *seller*; weighing charges, Re. 1 per Candy of 20 maunds, included in broker's charges.
Nandurbar ..	Separate weighment paid by *buyer* at annas 10 per Candy.
Sherpur	Paid (yearly) servants of broker or Adhatya. Weighing charges included in brokerage charges.
Shahada	Engaged by both seller and buyer and paid annas 4 per cart by seller and annas 12 per Candy by buyer.
Dondaiche ..	Not ascertained.
Pachora	The Co-operative Society employs a permanent weighman.
Amalner .. .. & *Jalgaon*	Employee of the broker or Adhatya.
Maheji	Weighman is the servant of the gin-owner.

Q. 14.—*Allowances and Deductions.*

Dhulia .. .. Rs. 2 per cart of 10 maunds (or Rs. 1-8-0 for 6 maunds) made up as folows :—

	Re.	a.	p.
Weighing	0	8	0
Hamali	0	3	0
Commission (including charity)	1	5	0

Nandurbar—From seller .. 12½ annas per cart, *viz.*

	Rs.	a.	p.
Commission	0	8	0
Hamali		....	
Dharmao	0	0	6
Pinjrapol	0	1	0

Weighing paid separately (see above, say annas 5 per cart).

From buyer—10 annas per Candy commission, and
5 „ „ Hamali.

Sherpur—From seller—

	Rs.	a.	p.
Hamali	0	4	0
Pinjrapol	0	2	0
Jokhami & Adhat (including weighing charges)	0	8	0 to 0 12 0 or Re. 1 per cart.

From buyer—8 annas per Candy.

Shahada .. .. Adhat from Re. 0-12-0 to Re. 1 per 100 rupees (say Rs. 1-8-0 to Rs. 2 per cart).

Dharmao Re. 0-1-3 per cart.

Weighing charges Re. 0-4-0 per cart.

Dondaiche .. Adhat at Re. 0-12-0 per cent. (Rs. 1-8-0 to Rs. 1-14-0 per cart).

Hamali Re. 0-3-0 per cart of 10 maunds.

Pinjrapol Re. 0-1-0 do.

Dharmao Re. 0-0-3 do.

National school Re. 0-0-6 do.

Watering charges Re. 0-1-0 do.

Total, say, Rs. 1-13-9 to Rs. 2-3-9 per cart.

Pachora .. (Co-operative Society)—

Commission Re. 0-2-0 per cart.

Adhat Re 0-8-0 per Rs. 100.

Dharmao Re. 0-0-6 per cart.

The commission includes weighing charges.

Jalgaon .. .. Re. 0-8-0 to Re. 0-9-0 per cart from seller, and

Re. 0-6-0 per cart from purchaser.

Sellers are charged :—

Commission and weighing Re. 0-6-0 per cart of 480 seers.

Dharmao Re. 0-1-0 per cart for 480 seers.

Bhatta Re. 0-0-6 do.

Pinjrapol Re. 0-0-6 do.

Additional Pinjrapol this year Re. 0-1-0 per cart of 480 seers.

Amalner .. Ground rent Re. 0-2-0 per cart.

Brokerage, etc., Rs. 1-8-0 per cart for 432 seers or under.

Rs. 2-0-6 per cart above 432 seers up to 792 seers.

The latter includes :—

	Rs.	a.	p.
Weighing	0	8	0
Hamali	0	2	6
Commission	1	2	6
Pinjrapol	0	2	0
Dharmao	0	1	6

A fixed allowance of 5 seers per cart is also taken by buyers.

Maheji .. .. 1 anna charity cesses per cart only.

GENERAL.

1. The investigator has also devoted considerable time to an enquiry as to how local prices are calculated from Bombay prices and details of " export charges." It is doubtful if this can profitably be followed up as the most important factor of all-ginning percentage is variable. So long as there is competition amongst buyers, the nominal market rates will probably correspond fairly closely to Bombay rates. I shall go through these details with him later and if any definite conclusions emerge they can be dealt with later.

2. The system of forward " ring " sales by which the seller weighs over his Kapas and nominates some future date for the settlement of the rate has been enquired into and it was found that out of 350 cultivators (3 villages) four only had sold in this way. It is stated that this system has fallen into disfavour since 1920.

3. Sales of ginned cotton by petty dealers who have collected Kapas from villages seem to be considerable.

4. The reasons why all the Co-operative Sale Societies (Co-operative commission shops) except that at Pachora have failed would seem to be worth enquiring into. Even the Pachora Society seems to have handled more carts for petty dealers than for cultivators. The Society has also sold *Kapas* brought in from the Nizam's Dominions. Such commission shops seem to have attracted a certain number of cultivators who have now reverted to village sales because of the disputes over quality in markets like Dhulia. This might be taken up by the Divisional Cotton Committee.

Individual Answers.

The proportion of cultivators and traders selling Kapas in each market has already been dealt with. It has also been stated that cultivators cannot obtain advances on cotton deposited but that petty traders are financed by ginners and Adhatyas. The remaining questions related to :—

(1) The rates actually settled and received as compared to the quoted market rate.

(2) Deductions and allowances.

I have been through the answers very fully with the Chief Investigator and it appears that in very few cases have really complete answers to our questions been obtained. The question " how much money have you actually received " has not been answered directly in a single instance so far as I can ascertain. Apparently a good deal of opposition was placed in the way of the investigators, obtaining full information.

Dhulia Market.—The Chief Investigator states that during the first day's investigation the rates settled in the market for over sixty carts were recorded before the carts left the market. Then the ginning factories were visited and the rates finally agreed upon recorded and notes made on the weighment. Finally the dalals' shops were visited and the details of the actual payments obtained. If this procedure could have been continued most useful figures would have been obtained but one of the biggest buyers stopped weighment when the investigators visited the ginning factory so as to prevent them getting details of the " Vandas. " Next day the dalals refused to give the rates at which the bargains had been settled and the investigators were only able to get the final rates and hence did not get details of the reductions in rates made during weighment. On the first day, October 28th, both rates were recorded for 23 carts of which 22 belonged to cultivators with the following result :—

Deductions in annas per maund of 72 *seers* (150 *lbs.*)

Deductions..	..	0	4	8	12	32
Number of carts	..	5	10	5	2	1

The declared market rate was Rs. 24; of the 23 carts, referred to above, the rates *accepted* in the *market* were as follows :—

	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Rates	25 12 0	24 8 0	24 0 0	23 12 0
Number of carts	1	6	11	5

The rates actually paid were :—

	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Rates	24 4 0	24 0 0	23 12 0	23 8 0
Number of carts	4	3	8	8

For the remaining 27 carts (20 of which belonged to cultivators) the rates settled in the market were as follows :—

	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Rates	24 8 0	24 4 0	24 0 0	23 12 0	23 8 0
Number of carts	2	4	4	8	9

The final rates were not ascertained.

On the second day, October 29th, the rates declared were Rs. 25-4-0 and Rs. 24-4-0. Of the 50 carts recorded, 47 belonged to cultivators. Reductions on dispute of 4 annas per maund were recorded in the case of 5 carts and of 12 annas for 1 cart; for the others only final payment rates were ascertained which were as follows :—

	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Rates (paid)	24 6 0	24 4 0	24 0 0	23 12 0	23 8 0	23 4 0	23 0 0
Number of carts	1	4	14	29	1	0	1

For subsequent dates no information about "Vanda" deductions has been obtained and as the rates varied widely according to the quality of the cotton no deductions can be drawn from them.

In only one case has the cultivator's figure for the lot of the Kapas sold been recorded (his cotton weighed ½ maund less than at the village). Details of the deductions made by the weighmen from the lot of the last bundle were not recorded. A fixed *dalali* of Rs. 2 per cart is recorded throughout.

Amalner.—The charges in this market are Rs. 2-2-6 per cart Adhat, 2 annas per cart rent (municipality) and an allowance of 5 seers in weight. No actual weights are recorded and no record of deductions. Apparently the rates settled in the market was not recorded but the rates on which payments were made. The following rates are of some interest :—

1ST DAY—DECEMBER 3RD.

Market rate Rs. 22-8-0 to Rs. 22-12-0 per maund of 72 seers. Of 50 carts 17 were brought by cultivators and 33 by traders.

	Rs. a. p.	Rs. a. p.
Rates	22 12 0	22 8 0
Number of carts	20	30

2ND DAY—DECEMBER 4TH.

Rate Rs. 22-0-0 to Rs. 22-8-0. (Of 50 carts 16 were brought by cultivators).

	Rs. a. p.	Rs. a. p.	Rs. a. p.
Rates	22 8 0	22 4 0	22 0 0
Number of carts	16	20	14

3RD DAY—JANUARY 20TH.

Market rate Rs. 20 to Rs. 21. (Of 50 carts brought were 81 by cultivators).

	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Rates	21 0 0	20 12 0	20 8 0	20 4 0	20 0 0
Number of carts ..	2	2	13	17	16

Other dates show a similar range.

Jalgaon.—Commission of 8 annas (now 9 annas) per cart is recorded throughout. No records of weights or of the rates settled in the market. The individual replies show nothing of interest.

Sherpur.—The replies from this market are of more interest as in 25 cases (16 cultivators and 9 traders) the weight of cotton was known by the seller and could be compared with the market rate. In only three cases do the weights tally exactly, but the discrepancy in the other cases is sometimes plus and sometimes minus and is clearly

due to the fact that the 'home' weights were based on a different maund. In this market weights were taken to fractions of a seer.

Another interesting fact is that some cultivators are charged Re. 1 per cent. Adhat and some annas 12 per cent. while traders only pay 8 annas Adhat per cart. Hamali and Dharmao at 4 and 2 annas per cart respectively are the same for all.

One dispute over quality is recorded resulting in deduction of 2 annas per maund. The prices vary considerably but considering the dates this was probably due to difference in qualities.

Dondaiche.—Sixteen cartloads of known weight (12 belonging to cultivators) were recorded and all weighed 2 to 4 seers per cart less except three where the discrepancy was considerably larger. The rates in this market compared unfavourably with Dhulia rates for the same date.

The other answers do not bring out any point of importance. The investigators have not been very successful with the market investigations, indeed it appears that both buyers and dalals put obstacles in the way of their finding out exactly what deductions the cultivator has to submit to. Such information as has been obtained bears out the conclusions already arrived at, *viz.*, that weighments are on the whole accurate but in several markets deductions are made to which cultivators object, and secondly, that the seller—whether cultivator or trader—often does not get the rate at which the bargain is struck and has to submit to deductions enforced by the buyer.

SUMMARY OF MARKET RECORDS.

Name of Market.	Date.	Number of cultivators.	Amount, *i.e.*, produce sold.	Number of merchants.	Amount, *i.e.*, produce sold	Remarks.
			Rs. a. p.		Rs. a. p.	
Amalner	3rd December 1925.	16	1,502 5 0	34	6,932 14 6	
	4th December 1925.	15	2,987 7 6	35	7,018 2 6	
	20th January 1926.	15	2,727 10 0	35	6,381 5 9	
	21st January 1926.	15	2,754 11 3	35	6,404 3 9	
	22nd January 1926.	10	1,828 11 9	40	7,568 7 6	
	23rd January 1926.	9	1,539 7 9	41	7,443 11 6	
		80	13,340 5 3	220	41,743 13 6	
Dhulia	28th October 1925.	42	10,187 13 0	8	2,353 2 0	
	29th October 1925.	47	10,901 8 6	3	1,889 4 0	
	13th January 1926.	27	6,341 10 9	23	10,812 7 0	
	16th January 1926.	31	5,818 15 9	19	7,558 14 9	
	18th January 1926	20	3,978 10 6	30	7,839 0 3	
	19th January 1926.	17	3,079 0 0	33	5,994 10 9	
		184	40,307 10 6	116	36,447 6 9	
Dondaiche	7th November 1925.	44	9,694 3 6	6	5,060 6 0	
	24thNovember 1925.	14	2,005 1 6	3	599 3 3	
	17th January 1926.	5	2,306 11 3	2	3,429 9 3	
		63	14,006 0 3	11	9,089 2 6	
Sheerpur	6th January 1926.	9	2,210 4 3	2	1,182 6 6	
	7th January 1926.	7	852 8 3	1	486 3 3	
	8th January 1926.	9	2,012 7 9	3	4,478 7 0	
	9th January 1926.	23	4,056 14 3	3	2,337 8 9	
	10th January 1926.	13	3,635 15 3	3	4,157 10 9	
		61	12,770 1 9	12	12,642 4 3	
Nandurbar	25thNovember 1925.	5	707 8 9	9	2,333 5 0	
	26thNovember 1925.	13	2,763 7 9	20	1,301 9 3	
	13th January 1926.	2	174 . 9	1	413 11 0	
	15th January 1926.	2	557 3 0	1	157 0 9	
		22	4,202 13 3	31	4,205 10 0	
Jalgaon	2nd December 1925.	5	680 2 0	11	5,096 2 0	
	3rd December 1925.	..	....	13	4,350 4 0	
	23rd December 1925.	..	....	6	4,062 3 0	
	24th December 1925.	..	....	4	1,961 15 0	
	26th December 1925.	1	75 2 0	6	1,284 4 0	
	16th January 1926.	..	....	3	4,891 12 0	
		6	755 1 0	43	21,646 8 0	
Maheji	29th November 1925	1	138 12 0	3	774 6 0	
	30th November 1925	..	....	1	297 15 0	
		1	138 12 0	4	1,072 5 0	
Pachora	25th November 1925	16	3,699 4 0	2	952 0 9	
	26th November 1925	11	2,580 13 3	7	2,967 5 3	
	Total ..	27	6,280 1 3	9	3,919 6 0	

Note.—Shahada visited too late to get details.

2. Cotton Finance Enquiry—Berar.

(a) *Village Investigations—Summary.*

(1) Twelve villages were selected for these enquiries, three each from the districts of Yeotmal, Amraoti, Buldana and Akola.

Detailed replies have been received from 940 cultivators as under :—

Yeotmal District.	Malkhed ..	46
	Lakh	37
	Kalamb ..	100
	Total ..	183
Amraoti District ..	Itki	58
	Haturna ..	47
	Loni	75
	Total ..	180
Buldana District ..	Shegaon ..	100
	Kherda ..	77
	Asalgaon ..	100
	Total ..	277
Akola District ..	Sirsoo ..	100
	Gaigaon ..	100
	Batwadi ..	100
	Total ..	300

Four replies are not complete owing to the cultivators being absent from the village at one or more stages of the investigation.

Summaries of the information* obtained from each village are attached.

The same difficulty with regard to strict adherence to the different periods of enquiry laid down, as was experienced in the

* Published separately.

Khandesh investigation, was also found in Berar. The periods were modified as under :—

YEOTMAL DISTRICT ..	1st period—1-30th November 1925.
	2nd period—1-31st December 1925.
	3rd period—15th January 1926 to 20th March 1926.
AMRAOTI DISTRICT ..	1st period—1-30th November 1925.
	2nd period—1st December 1925 to 31st January 1926.
	3rd period—1st February to 31st March 1926.
BULDANA DISTRICT ..	1st period—1st October to 30th November 1925.
	2nd period—1st November to 15th December 1925.
	3rd period—1st January 1926 to 28th February 1926.
AKOLA DISTRICT ..	1st period—Before 10th November 1925 to 7th December 1925.
	2nd period—10th November 1925 to 15th January 1926.
	3rd period—March and April 1926.

It would appear advisable that, in similar enquiries in future, village investigations should be continued, say from 1st October to 31st March, and monthly records kept of the operations and transactions of each individual grower in a village over that period of time.

(2) *Total holdings and cotton areas.*

The total holdings and the cotton area of the cultivators recorded in the 12 villages under investigation are approximately 30,980

and 16,860 acres, respectively. That is to say, 54·4 per cent. of the cultivated area recorded is under cotton, the remainder being under various grain crops, chiefly jowar. The average size of holding is approximately 33 *acres*.

The following table shows the sub-division of the cultivators recorded according to the size of their holdings :—

Small, *i.e.*, below 15 acres	352	
Medium, *i.e.*, 15-50 acres	435	
Medium large, *i.e.*, 51-100 acres ..	112	
Large, *i.e.*, over 100 acres	37	
Total ..	936	(4 unrecorded).

Of the 940 cultivators recorded, 477 (50·7°/₀) are proprietors, 159 (17°/₀) are tenants and 304 (32·3°/₀) are both proprietors and tenants.

(3) *Indebtedness.*

A good deal of information with regard to the extent of cultivators' borrowings is contained in the summaries and a statement is appended showing, village by village, the number of cultivators with and without advances, the total amount borrowed from different sources, the average amount borrowed per cultivator taking advances and the amounts taken under different rates of interest (Statement No. 1).

Many cultivators complain of the exorbitant rates of interest charged by the village sowkars. The Chief Investigator remarks in his report that the poor seasons of the last two years are responsible for a considerable increase in village indebtedness.

Out of 940 cultivators recorded, 595 (63·3 per cent.) have taken advances amounting in all to Rs. 3,47,338. The average borrowing per head is, therefore, Rs. 583.

The maximum amount borrowed per head is Rs. 989 in Kalamb village and the minimum Rs. 145 in Kherda village.

The average borrowings per acre of cotton, for the different classes of cultivators, are to be found in the village summaries. These are summarised below :—

Village.	Average cash advance per acre of cotton.			
	Small.	Medium.	Medium-Large.	Large.
	Rs. a.	Rs. a.	Rs. a.	Rs. a.
Malkhed	11 0	16 0	17 0	7 0
Lakh	31 0	18 0	17 0	*Nil.*
Kalamb	59 0	25 0	36 0	23 0
Itki	6 0	8 0	5 0	2 0
Haturna	6 0	3 0	7 0	*Nil.*
Loni	7 0	11 0	7 0	*Nil.*
Shegaon	13 0	12 0	11 0	*Nil.*
Kherda	7 0	6 0	6 0	1 0
Asalgaon	7 0	10 0	9 0	*Nil.*
Sirsoo	35 0	31 0	31 0	27 0
Gaigaon	67 0	24 0	26 0	58 0
Batwadi	59 0	31 8	123 0	*Nil.*

Although no attempt at a general enquiry into agricultural indebtedness was made, the figures recorded appear to justify the conclusion that indebtedness on the whole is moderate. There are very few instances recorded of cultivators taking loans in the form of cotton seed. No record was received of a cultivator having entered into a bond to sell his kapas through his money-lender.

Only one cultivator sold any of his crop in advance. In this single case, only the crop remaining after two pickings was sold, and the cultivator received Rs. 100 for six acres.

Advances recorded in the second period (*i.e.*, subsequent to cultivation advances) are negligible. Many cultivators state that they are required to sell off their crop early in order to repay the money-lenders, but it is difficult to reconcile this assertion with the actual recorded times of sales, which will be discussed later on.

Relation between tenantry and indebtedness.

Evidence recorded goes to show that there is a more or less close relationship between tenantry and indebtedness. In 9 villages investigated there are 119 tenants alone, of which 91 or 76·5 per cent. are debtors. In the same nine villages, there are 320 proprietors alone, of which 135 or 42·2 per cent. are debtors.

However, though the percentage of debtors is greater in the case of tenants, the amount of debt incurred by proprietors is nearly three times that incurred by tenants. The incidence of debt per head in the case of tenant-debtors is Rs. 187, while in the case of proprietor-debtors it is Rs. 463. In Akola section, the Chief Investigator has shown that the debt taken by proprietors is nearly seven times that taken by tenants. This result is to be anticipated from consideration of the wider credit which is generally at the disposal of proprietor-cultivators in comparison with tenant-cultivators.

Source of borrowings.

The appended Statement No. 1 shows the different sources of borrowing and the total amount borrowed from each source in each village under investigation. The principle source of borrowings is, as in Khandesh, the village sowkar or money-lender. In Yeotmal, Amraoti and Buldana districts out of a total sum of Rs. 1,52,580 taken by cultivators in advances, no less than Rs. 1,39,980 (91·7 per cent.) was obtained from the sowkar. In comparison with this, the other sources of borrowing are of minor importance. It is noteworthy that, at least in these three districts co-operative finance is practically never made use of. This is quite in contradistinction to Khandesh where, on the whole, co-operative societies advanced reasonably large amounts to the cultivators. In the Akola district, however, out of a total sum of Rs. 1,94,758 taken in advances, Rs. 1,01,257 or approximately 52 per cent. was borrowed from some co-operative institution, *e.g.*, society or bank. The record of loans taken from dalals or traders is negligible and is in definite contradistinction to the commonly expressed opinion that many cultivators are financed by such traders, either on condition of selling their crop through them or of mortgaging all or part of it in advance. This may be due in part to the circumscribed character of the enquiry but, taken in conjunction with the evidence from Khandesh, it would appear to indicate that such forms of financing are being definitely abandoned in these cotton-growing tracts.

Rate of interest on loans.

Statement No. 1 appended shows the total amounts borrowed in each village classified according to the rates of interest demanded. As might be expected in villages where the only real source of advances is the sowkar, the general level of interest charges is high and the almost universal complaint of the cultivators recorded in this connection seems to be justified. Out of a total borrowing of Rs. 3,47,338, Rs. 72,693 or 20·9 per cent. was lent at rates of interest above 20 per cent. per annum. Only Rs. 29,261 or 8·4 per cent. was lent at under 12 per cent.

This includes Rs. 1,980 borrowed from relatives on which no interest was stated to be charged.

The great bulk of advances taken Rs. 2,45,384 or 70·7 per cent. was given on rates of interest varying from 12 to 20 per cent.

It is noteworthy that during the village enquiries at Gaigaon a village in Akola section, it was found out that certain land-owners had been borrowing considerable sums from co-operative credit societies at 12 per cent. and, at the same time, were advancing varying amounts to small cultivators at 24 per cent. That such action is possible denotes a want of safeguards by the co-operative credit societies in their financing transactions.

Special mention may be made of the "sawai" system of making advances which seems to be common in some villages, notably Kalamb where Rs. 22,145 out of a total of Rs. 70,236 was advanced in this way. Money-lenders in the villages advances loans to cultivators on mortgage of land. These loans are generally for short periods—3-6 months—and carry the privilege of renewal. Debts contracted in this way are mostly for agricultural purposes and have to be repaid, either in money or in kind, after harvest by *one quarter more* than the amount received by the money-lender. Altogether Rs. 36,135 or 23·7 per cent. of the total advances recorded were taken on sawai, *i.e.*, at 50 to 100 per cent. per annum.

4. *Yield of kapas.*

Statement No. 2 attached shows the yield of kapas, total and per acre, in each of the villages under investigation. The yield per acre varies considerably averaging 62 lbs. in Buldana district, 210 lbs. in Amraoti district and 152 lbs. in Yeotmal district. Only in Amraoti district is the crop said to be better than last year; whereas, in Buldana district, it is reported to be almost a failure.

The average yields per acre for each class of cultivator in each village recorded are tabulated below :—

District.	Village.	Yield of kapas per acre (lbs.)			
		Small under 15 acres.	Medium 15–50 acres.	Medium-Large 50–100 acres.	Large over 100 acres.
Yeotmal	Malkhed	154	165	222	259
„	Lakh	72	94	89	174
„	Kalamb..	209	133	141	205
Amraoti	Itki	264	231	285	402
„	Haturna	264	198	177	178
„	Loni	153	139	121	135
Buldana	Shegaon	47	43	61	25*
„	Kherda	71	105	64	121
„	Asalgaon	28	40	37	41
Akola	Sirsoo	73	93	125	181
„	Gaigaon	130	122	114	102
„	Batwadi	126	127	106	152

5. *Sales.*

(*a*) *Method of sale.*—The total amount of kapas produced by the cultivators recorded in the villages under investigation was approximately 22,29,244 lbs. Of this amount :—

(*a*) 11,65,887 lbs. (52·3%) were sold in villages.

(*b*) 7,73,251 „ (34·7%) were sold in markets.

(*c*) 2,90,106 „ (13· %) were unsold at the close of the investigation.

Statement No. 3 attached shows the percentage of local and market sales, village by village. The local sales were made mostly to petty cotton merchants and many cultivators state that they prefer this method of sale as they thereby avoid the difficulties, discomforts and incovenience encountered in the markets. However, the majority of sales were made in regulated markets and considerable information has been obtained with regard to the system of sale in such centres. Summaries of this information will be

* Only one cultivator with 124 acres under cotton.

found under "replies regarding general information" on the village sheets attached.*

The system of cotton markets in Berar has been carefully organised and regulated and all the recognised markets are managed by Market Committees and governed by market laws and regulations. This enquiry, however, brings out most clearly that the theory of management is considerably better than the practice in most of the markets and that there is considerable scope for improvement in the interests of the cultivators.

From replies received, the chief complaints of the sellers are :—

(1) The rate of sale fixed in the market is hardly ever adhered to and the cultivator does not know what actual rate he will receive for his kapas until weighment is started or, in some cases, completed. Several cultivators said that the rate was not disclosed until final payment was made by the adatya.

(2) The adatyas have undue power in the markets and they are found to work mostly in the interests of the buyers.

This is said to be due to the fact that the cotton growers are unrepresented or inadequately represented on the Market Committees.

All market sales have to be conducted through adatyas.

(3) There is a very general complaint of unfair deductions, both in money and in kind, from the seller at the time of weighment and final payment for his kapas. These deductions are generally said to be on account of particular reasons affecting the quality of the kapas, *e.g.*, rain damage, black leaf, boll worm stain, last pickings, etc., etc. Such deductions amount to 14-28 lbs. of kapas per cart and, though originally fixed by the market committees as compensation for inferior quality, have now become a general practice. In Amraoti market, every cart of kapas was subject to a deduction of 2 dhadas (14 lbs.) this season, irrespective of the quality of kapas it contained. Several cultivators record that a deduction of 1 dhada per cart is made in cloudy weather. Likewise many cultivators state that they are required to give small quantities of kapas to market menials, weighmen and ginning factory employees.

* Published separately.

Deductions in the price are equally common and are referred to in para. 1 above. These deductions are specially marked at Amraoti market, where the prices actually received by sellers were Rs. 10 to 35 per khandi under the declared rate. A typical case is recorded by one cultivator from Loni village who took a cart to market where it was purchased without a rate being announced. After 2 or 3 pallas had been weighed, the adatya said the rate would be Rs. 105. But the buyer would only give Rs. 95 and the seller had eventually to accept this rate. One other cultivator says "there is no limit to deductions if the seller is ignorant."

(4) A few cultivators complain that, although beam scales are used for weighing and are quite satisfactory, the mode of weighment is bad and the weighmen manipulate the weighing in the buyers' interest.

There is no complaint that the cultivators do not receive money in full from the adatyas, although in some cases, inconvenience is caused by such payment being delayed until late at night.

The adatyas charge 2 annas per Rs. 100 as commission if payment is made in cash instead of in notes.

All the cultivators recorded, with very few exceptions, have declared themselves in favour of open markets provided rates are fixed by competition and open bidding and declared at the actual time of sale. Several cultivators thought that carts should be valued individually and the rates declared in the market.

The following table shows the method of sale, *i.e.*, in market or village or both, by different classes of cultivators. Lint sales are also noted :—

Class of Cultivator.	Sales made in			Lint sale.
	Village.	Market.	Both village and market.	
Small under 15 acres	282	180	6	*Nil.*
Medium 15-50 acres	246	303	24	5
Medium-Large 50-100 acres ..	57	95	9	9
Large over 100 acres	3	39	1	6

Further information in detail regarding market sales is to be found under market investigation reports.

(*b*) *Sales of lint.*—By far the great majority of the cultivators recorded sold their kapas in an unginned condition. Only 19 cases of actual sales of lint are recorded although there is evidence to show that a considerable proportion of the kapas unsold at the termination of the enquiry would be ginned and sold as lint. As all lint sales were made in the 3rd period of the investigation and rates were not given, it is not possible to institute a complete comparison between the profits of lint sale as compared with kapas sale.

The following example is, however, quoted in detail by the Chief Investigator :—

1. *Cultivator* (*No.* 81 *of Loni village*).

Quantity of kapas.	Rate offered.	Estimated value.
35 khandies=21,000 lbs.	Rs. 105 per 784 lbs.	Rs. 2,813.

Actually received after ginning and lint sale.

	Rs.
10 bojas at Rs. 152 10 bojas at Rs. 153	3,050
Add—Value of seed at Rs. 15 per khandi	300
	3,350
Deduct—Ginning charges, etc.	140
Actual amount received	3,210

He, therefore, received Rs. 397 or approximately Rs. 11/6 per khandi of kapas *more* by ginning and selling lint.

The additional profit of lint sales is realised by several cultivators who state that, if they cannot get a good price for their kapas, they would deposit it for ginning and subsequent sale of lint. The following difficulties in the way of doing this are mentioned :—

(*a*) Small growers cannot make these arrangements.

(*b*) Risk of loss in ginning factory by theft, etc.

(*c*) Want of storage accommodation.

(*d*) Lint sales are made late (March-May) and cultivators cannot afford to wait for money.

(*e*) Insurance charges are heavy.

(*c*) *Time and rates of sales.*—The following table gives the percentage of kapas picked up to the end of the 2nd period of the investigation and the percentage of picked kapas sold at that time :—

District.	Village.	Approximate date of end of 2nd period.	Percentage of total crop picked.	Percentage of picked crop sold.
Yeotmal	Malkhed	31st December 1925.	62 %	41 %
„	Lakh	31st December 1925.	59 %	19 %
„	Kalamb	31st December 1925.	65 %	36 %
Amraoti	Itki	31st December 1925.	Not recorded.	
„	Haturna	31st December 1925.	Do.	
„	Loni	31st January 1926.	Do.	
Buldana	Shegaon	30th November 1925	56 %	48 %
„	Kherda	15th December 1925	88%	57 %
„	Asalgaon	30th November 1925	48 %	32 %
Akola	Sirsoo	26th November 1925	Not recorded.	
„	Gaigaon	8th January 1926.	Do.	
„	Batwadi	15th January 1926.	Do.	

These figures do not appear—except perhaps in Buldana district—to indicate any extreme urgency to dispose of his kapas on the part of the cultivator.

An attempt has been made, from the evidence recorded to give the number of sales :—

(*a*) made before 31st December 1925 ;

(*b*) made between 31st December 1925 and end of investigation.

This information is tabulated below and the following table indicates the distribution of early and late sales according to classes of cultivators:—

Village.	Early sales before 31st December 1925.	Late sales after 31st December 1925.	Percentage of total crop unsold at end of enquiry.
Malkhed	29	37	33 % on 15th February 1926.
Lakh	25	37	13 % on 28th February 1926.
Kalamb	71	98	7 % on 20th March 1926.
Itki	20	55	20 % on March 1926.
Haturna	17	45	37 % on March 1926.
Loni	31	65	·9 % on March 1926.
Shegaon	58	79	14 % on 14th February 1926.
Kherda	63	42	10 % on 1st March 1926.
Asalgaon	20	86	1·5 % on 6th February 1926.
Sirsoo	86	42	1·5 % on 8th March 1926.
Gaigaon	61	74	6·5 % on 8th March 1926.
Batwadi	80	35	6· % on 17th April 1926.

Class of Cultivators.	Number of early sales before 31st December 1925.	Number of late sales after 31st December 1925.
Small under 15 acres	204	254
Medium 15-50 acres	257	318
Medium-Large 50-100 acres	71	81
Large over 100 acres	22	22

As in Khandesh, those who sold their crops early got better rates than those who held up their kapas until after December. Many cultivators appear to have held up considerable portions of their crop until after the end of the year in the hope of getting better rates and it appears that, as in Khandesh, there is no severe pressure to sell owing to lack of finance.

The rates obtained in the markets were higher than those obtained by village sales, but the difference does not appear to be nearly so great, as was found in Khandesh. A better comparison would have been possible if the rates of late sales had been recorded. Such figures were, however, not called for in the questionnaire and the information on this point is unfortunately incomplete. Special notes on sales are attached under "Summary of Sales" to the village summaries. A statement of the weights commonly used in the villages under investigation is attached. (Statement No. 4.)

STATEMENT No. 1.

Berar Cotton Finance Enquiry.

Abstract of Advances recorded.

Name of Village.		Number of cultivators recorded.		Source of Advance. Total Rs. under each head.					Total amount taken in Advances.	Average amount per head of borrowers.	Rates of Interest. Total Rs. under each head.					
		Without Advance.	With Advance.	Sowkar.	Co-operative Society or Bank.	Landlords.	Adatyas.	Other.			*Nil.*	Below 12 per cent.	12-16 per cent.	16-20 per cent.	Over 20 per cent.	Sawai.
								Rel.	Rs.	Rs.						
Yeotmal.	Malkhed ..	7	39	13,020	..	2,601	..	1,500	17,121	439	600	175	4,700	395	2,520	8,731
	Lakh ..	6	31	11,883	..	..	..	..	11,883	383	..	..	1,100	6,850	500	3,433
	Kalamb ..	29	71	68,541	..	875	..	820	70,236	989	810	5,631	26,000	12,760	2,890	22,145
Amraoti.	Itki ..	29	29	3,979	1,450	..	..	..	5,429	187	..	..	3,275	1,629	525	..
	Haturna ..	29	18	2,825	..	..	..	..	2,825	157	65	..	1,065	900	795	..
	Loni ..	25	50	8,190	3,735	..	..	..	11,925	238	350	2,375	3,614	2,225	1,885	1,476
Buldana.	Shegaon ..	43	57	16,600	800	..	..	..	17,400	305	..	..	11,350	3,375	2,675	..
	Kherda ..	39	38	4,826	500	..	150	30	5,506	145	66	500	2,245	1,870	625	200
	Asalgaon ..	44	56	10,166	..	..	..	89	10,255	183	89	..	5,791	3,800	425	150
Akola.	Sirsoo ..	28	72	22,951	40,363	..	..	..	63,314	879	..	..	48,866	700	13,748	..
	Gaigaon ..	24	76	9,425	60,894	..	..	8,000	78,319	1,031	..	8,000	65,344	2,150	2,825	..
	Batwadi ..	42	58	53,125	..	..	..	..	53,125	916	..	10,600	28,030	7,350	7,145	..

STATEMENT No. 2.

Area under cotton and yield per acre of the villages investigated.

District.	Village.	Area (Acres.)	Total yield (lbs.)	Yield per acre (lbs.)
1	2	3	4	5
Yeotmal	Lakh	758	78,768	104
,, ...	Malkhed	1,209	250,226	207
,, ...	Kalamb	2,111	305,833	145
Amraoti	Haturna	926	180,000	195
,, ...	Itki	1,125	337,800	300
,, ...	Loni	1,410	190,800	135
Buldana	Asalgaon	1,330	55,830	41
,, ...	Kherda	1,056	103,512	98
,, ...	Shegaon	1,578	72,221	46
Akola	Sirsoo	2,105	281,344	133
,, ...	Gaigaon	2,118	244,720	115
,, ...	Batwadi	1,236	128,380	104

Note.—Area cultivated by recorded cultivators only has been shown.

STATEMENT No. 3.

Berar Cotton Enquiry—Disposal of Kapas.

Name of Village.	Total quantity of kapas produced in lbs.	Percentage of Kapas.		
		Sold in village.	Sold at market	Unsold.
YEOTMAL DISTRICT.				
Malkhed	250,200	26·7	40·6	32·7 on 15th February.
Lakh	78,700	1	85·2	13·8 on 28th ,,
Kalamb	305,800	88·3	4·7	7 on 20th March.

STATEMENT No. 3—*contd.*

Berar Cotton Enquiry—contd.

AMRAOTI DISTRICT.

Itki	337,800	31·7	48	20·3 on 31st March.
Haturna	180,000	..	62·3	37·7 on 31st March.
Loni	190,800	14·6	84·5	·9 on 31st March.

BULDANA DISTRICT.

Shegaon	72,200	54·6	31·4	14· on 14th February.
Kherda	103,500	33·9	56·	10·1 on 28th February.
Asalgaon	55,800	50·7	46·7	1·6 on 6th February.

AKOLA DISTRICT.

Sirsoo	281,344	5·	93·5	1·5 on 8th March.
Gaigaon	244,720	2·5	91·	6·5 on 8th March.
Batwadi	128,380	21·	73·	6· on 17th April.

STATEMENT No. 4.

Weights used for kapas in the villages and markets investigated.

(1) YEOTMAL DISTRICT.

1. Malkhed. 1 Maund=19 Seers.
   20 Maunds= 1 Khandi.
2. Kalamb. 1 Maund=19 Seers.
   20 Maunds= 1 Khandi.
3. Lakh. 1 Maund=16 Seers.
   20 Maunds= 1 Khandi.

(2) AMRAOTI DISTRICT.

1.	Itki.	1 Maund =15 Seers. 20 Maunds= 1 Khandi.
2.	Haturna.	1 Maund =15 Seers. 20 Maunds= 1 Khandi.
3.	Loni.	1 Maund =15 Seers. 20 Maunds= 1 Khandi.

(3) BULDANA DISTRICT.

1.	Asalgaon.	1 Maund =20 Seers. 1 Maund =14 Seers. 20 Maunds= 1 Khandi.	Two different weights are prevalent.
2.	Kherda.	1 Maund =28 Seers. 20 Maunds= 1 Khandi.	
3.	Shegaon.	1 Maund =14 Seers. 28 Maunds= 1 Khandi.	

(4) AKOLA DISTRICT.

1.	Sirsoo.	1 Maund =14 Seers. 28 Maunds= 1 Khandi.
2.	Gaigaon.	1 Maund =14 Seers. 28 Maunds= 1 Khandi.
3.	Batwadi.	1 Maund =14 Seers. 28 Maunds= 1 Khandi.

(5) IN BERAR MARKETS.

28 lbs.= 1 Maund.
28 Maunds= 1 Khandi.

(*b*) *Market Enquiry—Summary.*

The investigators made enquiries in the following Berar cotton markets and a complete and interesting report of their investigations has been received from the Director of Agriculture, Central Provinces, and is appended in full:—(1) Khamgaon, (2) Shegaon, (3) Akola, (4) Balapur, (5) Yeotmal, (6) Darwa, (7)

Note.—In the villages of Yeotmal district and in a few others of the other districts of Berar ordinary stones are used for weights. These are only approximate and are generally heavier by a few tolas than the standard weight.

Amraoti, (8) Daryapur, (9) Wun, (10) Pandharkawada, (11) Jalgaon. In addition to the report, individual informatory sheets for each of the above markets were submitted by the investigators.

For the purpose of recording replies from individuals bringing kapas to market, nine market centres were selected. Individual replies were collected from 2,343 persons at different periods of the season. The markets selected and the dates of investigator's enquiries are tabulated below :—

Name of Market.	November.	December.	January.	February.	March.
Khamgaon ..	14th -20th ..	23rd	19th.	17th	18th
Shegaon	....	14th-15th	12th, 20th.	....	....
Akola	....	4th, 16th	....	1st, 2nd.	3rd, 6th
Jalgaon	3rd-5th	....	26th	....	....
Yeotmal	7th, 11th .. 26th, 28th ..	8th, 11th, 23rd, 24th.	22nd	23rd, 24th	....
Darwa	23rd-24th ..	1st, 9th, 10th	7th, 11th, 20th, 27th,	15th, 16th.	....
Amraoti*	18th, 19th ..	8th.	15th.	20th.	....
Balapur	28th, 30th ..	2nd, 16th, 17th	11th, 15th, 23rd	....	....
Banosa	2nd, 6th ..	14th ..	23rd.	17th.	....

* Also on 22nd October.

General information to be obtained for each market :—

A copy of the questionnaire will be found on page 67.

Questions (1 and 2)—*Management of market.*—All the markets investigated were managed by Market Committees. The various constitutions of the market committees are given below :—

Markets.	No. of representatives from		
	Cotton traders.	Municipality.	Sanitation Panchayat.
Khamgaon	3	2	....
Shegaon	3	2	....
Akola	3	2	....
Jalgaon	3	2	....
Yeotmal	3	2	....
Darwa	3	....	2
Amraoti	3	2	....
Balapur	3	....	2
Banosa	3	....	2

In no market recorded, are the cultivators directly represented on the market committee. *Details of the market staffs were given in the market sheets and were tabulated in the investigators' report.

Copies of subsidiary rules and bye-laws framed by the market committees of (1) Akola (2) Darwa, (3) Yeotmal have been supplied along with the investigators' report.

Question (3)—*Conduct of Sales.*—The system of sale in all the markets recorded is similar. The carts assemble in the morning and the buyers and adatyas meet and fix the rate to be offered that day for fine quality cotton. This rate is announced and posted on the market board. The seller then obtains his adatya who purchases a numbered pass from the market daroga which is attached to the cart to be sold. Then the buyers and adatyas visit the carts and settle upon a rate according to the quality of the cotton. In most markets, this fixing of rate is done under cover. In one or two smaller markets where arrivals are few bidding is open and the seller may refuse or accept the rate offered. In most cases, however, the seller does not know the rate until weighment has commenced and the real bargaining is done in the weighing place *i.e.*, the ginning-factory compound. The deductions, both in price and in kind, at the time of weighment is the chief complaint of the cultivators and it is beyond doubt that these deductions are most excessive and constitute a real hardship to the seller. In Yeotmal market the buyer marks the wheel of the cart with a number of crosses in chalk. Each cross represent a deduction of Rs. 5 per khandi from the declared market rate on account of rain damage, inferior quality, etc.

Question (4)—All cultivators must utilise the services of adatyas in making sales at recognised market centres.

Questions (5 and 6)—*Adatyas and brokers.*—The buyers all employ adatyas to act for them in market transaction. The same adatya acts for both buyer and seller, but it is obvious that he is the buyer's man and acts in his interests. The adatyas have servants who move about the market and seek out new business for their masters. The larger firms of buyers employ "brokers" for pur-

* These and other details will be found in the full report on the enquiry which has been published separately.

chasing their kapas. These brokers always act in the interests of the buyers and their duties cease after the actual purchase is made. They do not, like adatyas, see to weighment, and payment of rates.

Question (7)—*Advances on kapas.*—There are very few instances recorded of cotton being deposited for sale and advances taken thereon. Some factory owners undertake to store kapas in their factory compounds provided the owner agrees to get it ginned in that factory. On such kapas advances up to 60 per cent. of its value are made by the factory owners at rates of interest varying from 15—20 per cent. Details of such advances were tabulated at the end of the investigators' report and it is noteworthy that only 4·3 per cent. of the cultivators recorded have had recourse to this system.

Questions (8 and 9)—*Fixing of rates.*—The daily rate to be offered in each market is fixed by the buyers and adatyas and is posted up on the market board. The method used is described in the investigator's report. In some cotton markets, Bombay rates are posted but as the cultivators do not know the method of working out the market rate for kapas from the Bombay rate per khandi of lint (Oomras) this is not very helpful to them.* In Khamgaon, Akola and Darwa market, daily telegrams are received from Bombay and posted in the market, every morning. The rate of the day is posted on a board in each market. In Khamgaon market, the posting of the rate is announced by the ringing of a bell.

Question (10) *Storage in market.*—The only place for storage in the markets is in ginning factory compounds. Storage of kapas is not resorted to by the cultivators on any large scale, as there is much risk of theft, etc. Some factory owners give advances against kapas stored in the gin compounds, reference question (7) above.

Question (11)—*Records.*—Records of daily arrivals and rates are maintained by the market committees in all the markets recorded. The investigators have submitted a statement showing the number of arrivals and the market rate daily from 1st October 1925 to 30th June 1926 in Khamgaon, Yeotmal, Darwa, Amraoti, Banosa, Akola, Balapur and Shegaon markets. This statement is not attached to this report but is available for reference.

* The posting of Bombay rates enables cultivators to appreciate the direction of market changes.

A statement showing the total arrival of carts (1) for season ending 29th May 1925, (2) for season ending 29th May 1926, at 26 Berar markets is included in the report.

Questions (12 & 13) *Weighments.*—The following statement gives the system of weighment in use in the markets under investigation:—

Market.	Methods of weighment.	Weights commonly used for kapas.
Khamgaon	Beam scales.	56 lb. lots.
Shegaon	Beam scales.	,, ,,
Akola	Beam scales.	,, ,,
Jalgaon	Beam scales.	28 lb. lots.
Yeotmal	Avery platform balance.	....
Darwa	Avery platform balance.	....
Amraoti	Beam scales.	28 lb. lots.
Balapur	Beam scales.	56 lb. lots.
Banosa	....	....

There are no general complaints by the cultivators with regard to weighments. Some state that as there are no weights under 7 lbs (1 dhada) in use, the last quantity of kapas weighed, if under this amount, is ignored and the cultivator loses thereby. The weighmen are also said to be dishonest in some cases and liable to manipulate the weighing to the advantage of the buyer.

The position of the weigh-men in the various markets is as under:—

Khamgaon .. Servants of adatyas and not required to be licensed by the cotton market.

Shegaon .. Engaged by adatya and *paid by buyer* at rate of 5—6 carts to the rupee. They are licensed by the cotton market committee.

Akola .. .. Servants of adatyas and are paid at the rate of 0-2-3 per khandi of kapas weighed. Payment by buyer.

Jalgaon .. Licensed by cotton market committee and paid by seller.

Yeotmal .. Licensed by cotton market committee.

Darwa.. .. Licensed by cotton market committee.

Amraoti .. Licensed by cotton market committee : weighing charge is 9 annas, 6 annas to coolies for weighing and stacking and 3 annas to weighman per khandi. Paid half by purchaser and half by seller.

Balapur .. As at Akola.

Banosa .. Licensed by cotton market committee, license fee Rs. 5 per annum. Paid by buyer at rate of Rs. 0-2-3 per khandi of kapas weighed.

Question (14)—*Deductions.*—Market deductions include adat, market cess, gorakshan, charity, dispensary, weighing charge, hamali and toll tax. They total from Rs. 1-1-9 in Yeotmal to Rs. 2-8-0 in Khamgaon. The deductions at the various market centres are described in detail in the investigators' report and a tabulated statement of the various deductions in each market recorded is included. The cultivators do not have much complaint to make about these customary deductions which appear to be generally accepted. They are unanimous, however, in their opinion with regard to deductions made at the time of weighment for alleged inferior quality or rain-damaged kapas. These deductions are very common both in money and in kind and indications are not wanting that, in some markets, they are becoming customary irrespective of the quality of kapas.

Individual answers.

Individual replies were received from 2,343 persons in nine different market centres as under :—

Name of Market.	Individual replies recorded.		
	Actual Growers.	Petty Merchants.	Both growers and merchants
Khamgaon	310	51	8
Shegaon	120	9	..
Akola	213	12	..
Jalgaon	60	20	4
Yeotmal	328	60	..
Darwa	338	62	..
Amraoti	207	26	2
Balapur	288	27	..
Banosa	163	26	9
Totals ..	2,027	293	23

It can be seen from the above table that the percentage of carts brought in by cultivators is very large (86·5°/₀). In no market investigated was the majority of carts brought in by petty traders as was found to be the case in several instances in Khandesh.

The rates actually settled and received as compared with quoted market rate.

As in Khandesh, the information supplied is not sufficient on which to base any real comparison between the quoted market rate and the rate actually received by the cultivators. However, the rate of sale is given in practically every case recorded and, as the date of the enquiry is also recorded, it has been found possible to tabulate some figures illustrating the variation of rates in different markets at different periods of the season. This statement is appended (Statement A). It shows clearly that, as in Khandesh, the best prices were received by cultivators who sold their kapas early and that, during the season under investigation, "holding for higher prices" must have proved a most unprofitable speculation. In January, February and March, very few bales realised a higher rate than Rs. 116 per khandi and the percentage of sales of "black leaf" cotton, at under Rs. 80 per khandi in these three months is very high. Examination of the tabulated figures will show that there were two definite rates of sale in each month, firstly the rate for fine quality and secondly the rate for inferior "black leaf" or rain-damaged quality. As prices become lower, the percentage of sales on this second and lower rate increases considerably.

Deductions.

The evidence collected from individuals under "deductions from price" is incomplete and, in many cases, is confined to a mere statement of the ordinary market deductions, *e.g.*, adat, hamali gorakshan, etc. There can be no doubt, however, that these deductions were very large both in number and extent and that very few sellers indeed realised the declared market rate for their kapas.

Khamgaon Market.

November .. Declared market rate was Rs. 133-138, only 42°/₀ of sales recorded got over Rs. 132.

January .. Declared market rate was Rs. 120-115, only 26% of sales got Rs. 112-116.

February .. Declared market rate on 17th was Rs. 107; out of 91 sales, only 20% got over Rs. 104.

March .. Declared market rate on 18th was Rs. 107; out of 34 sales, only 18% got over Rs. 104.

Similarly

Darwa Market.

January—Declared market rate was—

7-1-26—Rs. 118
11-1-26—Rs. 119
20-1-26—Rs. 119
21-1-26—Rs. 119

} Out of 215 sales recorded on these days, only 2·8 per cent. got over Rs. 116.

Similarly

Balapur Market.

November .. Declared market rate on 28th November 1925 was Rs. 123. On 30th November 1925, out of 50 sales, 34 per cent. got above Rs. 120.

December .. Declared market rate on 16th and 17th was Rs. 116 out of 140 sales, only 25 per cent got Rs. 116 or over.

January .. Declared market rates were—

11th—Rs. 122
12th—Rs. 120
15th—Rs. 115
23rd—Rs. 110

} Out of 293 sales on these days only 11 per cent. got above Rs. 116 and only 30 per cent. above Rs. 112.

Akola Market.

March .. Declared rate on 3rd was Rs. 108. Out of 74 sales from 3rd—6th, only 18 per cent. got above Rs. 104 and only 1 per cent. above Rs. 108.

The above instances could be multiplied at any of the other markets recorded but they may be sufficient to indicate the divergence between the rates actually declared on the market board and the rates received by the sellers on the same day.

STATEMENT A.

Sales Summary.

Name of Market.	Dates of Inquiry.	No. of Sales.	Percentage Distribution of Sales recorded according to rates received in Market, per khandi of 784 lbs.												Remarks.
			Under Rs. 80.	Rs. 80–90	Rs. 90–100	Rs. 100/1–104	Rs. 104/1–108	Rs. 108/1–112	Rs. 112/1–116	Rs. 116/1–120	Rs. 120/1–124	Rs. 124/1–128	Rs. 128/1–132	Over Rs. 132	Declared Market rate.
	NOVEMBER.														
Khamgaon ..	14th—20th	209	..	..	..	..	..	5.8	6.2	19.6	8.1	2.4	*15.3*	*42.1*	138.
Shegaon	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Akola	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Jalgaon	3rd—5th.	50	..	..	..	..	..	..	..	..	..	2.	30	68.	....
Yeotmal	7th—11th—26th—28th.	90	..	..	7.8	..	*25.5*	5.5	10.3	..	7.8	*40.*	..	..	126,121.
Darwa	23rd & 24th.	54	..	..	..	..	7.4	*66.7*	9.2	..	..	..	..	*16.7*	139.
Amraoti	18th & 19th.	81	..	..	9.9	4.9	*18.5*	*22.2*	8.7	..	..	1.2	..	*34.6*	138,135.
Balapur	30th.	50	..	..	..	2.	2.	6.	16.	40.	8.	26.	..	..	....
Banosa	2nd & 6th.	58	..	..	..	..	..	..	..	..	..	*27.5*	*12.1*	*60.4*	128,135.
	DECEMBER.														
Khamgaon ..	23rd.	79	...	6.3	8.9	*20.2*	*35.4*	*29.2*	..	..	..	..	..	..	120 on 2/i.
Shegaon	14th & 15th.	71	1.4	2.8	4.2	..	*19.7*	*52.2*	..	*19.7*	..	..	..	..	118,119.
Akola	4th—16th.	186	..	.5	3.8	..	7.	13.	*39.2*	*24.2*	7.	5.3	..	..	127.
Jalgaon	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Yeotmal	8th—11th—23rd & 24th.	142	..	..	..	5.	*37.3*	*50.7*	7.8	..	.7	..	..	..	119,112.
Darwa	1st, 9th—10th.	100	..	..	..	2.	4.	2.	*24.*	*25.*	*26.*	*10.*	3.	.4.	136,126,120
Amraoti	8th.	73	1.4	9.6	2.7	..	9.6	6.8	15.1	13.7	8.2	*27.4*	*5.5*	..	130.
Balapur	16th & 17th.	140	..	..	.7	.7	..	*13.6*	*58.6*	*17.2*	1.4	7.1	..	..	116.
Banosa	14th.	50	..	..	..	..	2.	6.	*38.*	*52.*	2.	..	..	..	120.
	JANUARY.														
Khamgaon ..	19th.	82	2.4	1.2	4.8	2.4	33.1	29.3	26.8	..	..	..	..	..	115.
Shegaon	12th & 20th.	117	11.1	3.4	9.4	7.7	*28.2*	*29.1*	11.1	..	..	..	..	..	116,114.
Akola	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Jalgaon	26th	77	6.5	..	17.	15.5	19.4	24.6	17.	..	..	..	..	..	....
Yeotmal	22nd.	51	7.8	2.	2.	..	2.	*76.4*	9.8	..	..	..	..	..	115.
Darwa	7th, 11th, 20th & 27th.	215	15.3	4.2	5.6	1.8	*16.3*	*18.1*	35.9	2.8	..	..	..	..	119,112.
Amraoti	15th.	69	1.5	*13.*	*14.5*	..	8.6	10.2	1.5	*40.6*	*10.2*	..	..	..	122.
Balapur	11th, 12th, 15th & 23rd.	293	*14.*	*13.6*	12.3	6.5	10.6	*12.6*	*19.1*	*10.6*	.7	..	..	..	122,115,110.
Banosa	23rd.	64	6.3	*23.4*	11.	..	3.1	*21.9*	*34.3*	..	..	..	..	..	114.

STATEMENT A—*continued.*

Sales Summary—*contd.*

Name of Market.	Dates of Inquiry.	No. of Sales.	Percentage Distribution of Sales recorded according to rates received in Market, per khandi of 784 lbs.											Remarks. Declared Market rate.
			Under Rs. 80	Rs. 80–90	Rs. 90–100	Rs. 100/1–104	Rs. 104/1–108	Rs. 108/1–112	Rs. 112/1–116	Rs. 116/1–120	Rs. 120/1–124	Rs. 124/1–128	Rs. 128/1–132	Over Rs. 132	
	FEBRUARY.														
Khamgaon ..	17th.	91	26.4	6.	19.	22.	19.	1.	..	..	..	..	..	..	107
Shegaon	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Akola	1st & 2nd	71	50.7	2.8	25.4	14.1	7.	..	..	..	..	..	..	..	106
Jalgaon	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Yeotmal	23rd & 24th.	53	35.8	3.8	3.8	1.9	..	9.4	37.8	7.5	..	..	..	..	116,117
Darwa	15th & 16th.	58	34.5	6.9	1.7	..	8.7	31.	17.2	..	..	..	..	..	116
Amraoti	20th.	68	45.6	4.4	4.4	5.9	10.3	5.9	23.5	..	..	..	..	..	120
Balapur	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Banosa	17th.	58	39.6	6.9	6.9	..	12.1	34.5	..	..	..	..	..	..	120
	MARCH.														
Khamgaon ..	18th.	34	41.2	11.8	17-6	14.7	11.8	2.9	..	..	..	..	..	..	107,110
Shegaon	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Akola	3rd—6th.	74	39.2	10.8	24.4	6.8	17.5	1.3	..	..	..	..	..	..	108
Jalgaon	....	..	..	..	..	..	..	..	..	..	..	..	..	..	
Yeotmal	....	..	..	..	..	..	..	..	..	..	..	..	..	..	
Darwa	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Amraoti	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Balapur	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Banosa	....	..	..	..	..	..	..	..	..	..	..	..	..	..	....

3. North Gujarat Investigations.

(a) *Village Enquiry—Summary.*

(1) For the purposes of this inquiry, the investigators worked from three centres, Viramgam, Bavla and Morvi. In all, records were taken from 1,065 cultivators in 15 villages as under :—

(1) *Viramgam* centre ..	Hansalpur		44
	Bhojva		40
	Vani		15
	Detroj		117
	Dumana		44
	Dhakdi		37
			297
(2) *Bavla* centre	Bavla		127
	Rupal		100
	Derun		50
	Chaloda		100
	Visalpur		100
			477
(3) *Morvi* centre.. ..	Jetpur		97
	Mota Dahisara		78
	Zankara		59
	Barvalla		57
			291

(2) As the inquiry work did not actually begin until the end of February and, as the crop was, on an average, 1-2 months earlier than in a normal year, it was not found possible to adhere to the periodic nature of the investigations as contemplated in the questionnaires. As a matter of fact, in the Viramgam and Bavla centres, much of the kapas or *kallas* (bolls) was already in the hands of the purchasers before the inquiry commenced. This late start of the inquiry was most unfortunate as the investigators were quite unable to obtain reliable evidence of early sales and the records are practically confined to cultivators' advances and the ultimate disposal of their produce. Intermediate observations between the first picking and the final sales of kapas or kallas have not been made and, to that extent, this investigation does not furnish as complete information as was desired. In any future investigations of this nature, it appears most desirable that records should be continuous or that, at the least, arrangement should be made to obtain records at three definite stages (1) before any cotton is picked, (2) during picking and after some early sales have been made and (3) after picking is completed and the bulk of the crop has been sold.

The Chief Investigator in his report states that difficulty in obtaining information was experienced not only on account of the late start of the inquiry and the early crop, as mentioned above, but also as " all the three workers were quite new to the tract and the people." It is suggested that, in future, similar inquiries should not be commenced unless they can be undertaken by investigators who are familiar with the tract, people and conditions in the area where the inquiry is to be conducted.

(3) *Total holdings and cotton area.*

The average area of cotton per holding and the percentage of cotton area to total holding of the cultivators recorded in each village are tabulated below. In addition, the sub-division of

cultivators recorded, according to the size of their holdings is included :—

	Name of Village.	Per cent. of cotton area to total holding.	Average area of cotton per holding.	Number of cultivators recorded.				
				Small 15 acres.	Medium 15–50 acres.	Medium-Large 51–100 acres.	Large 100 acres.	Total.
		Per cent.	Acres.					
Viramgam.	Hansalpur	73.4	24	5	33	6	..	44
	Bhojva	55	20½	1	35	4	..	40
	Vani	67.4	43	..	9	3	3	15
	Detroj	43.7	8	37	80	..	..	117
	Dumana	70	46½	1	17	19	7	44
	Dhakdi	69.1	33	1	18	17	1	37
Bavla.	Bavla	58.9	9	55	72	..	..	127
	Rupal	58.8	11¾	33	67	..	..	100
	Derun	56	15	9	40	1	..	50
	Chaloda	43.3	5¾	68	31	1	..	100
	Visalpur	51.3	5½	91	8	..	1	100
Morvi.	Jetpur	49.5	32¾	1	36	42	18	97
	Dahisara	51	29	3	41	26	8	78
	Zankara	23.5	14½	1	31	20	7	59
	Barvalla	49.8	17	1	49	7	..	57
		..	..	307	567	146	45	1,065

Of the 1,065 cultivators recorded, 540, (50·7 per cent.,) are proprietors, 94, (8.8 per cent.,) are tenants and 431, (40.5 per cent.), are both proprietors and tenants. In the Morvi centre, all the cultivators 291 are recorded as proprietors, *i.e.*, tenants at will of the State.

(4) *Indebtedness.*

The information recorded with regard to advances taken by cultivators is appended in Statement A attached. This statement also shows the amounts taken from each source of advance and the amounts, under each source, taken at different rates of interest.

The village sowkar is by far the largest source of cultivators' borrowings and, on the whole, the rates of interest charged by sowkars are reasonable and compare favourably with similar rates recorded in the Khandesh and Berar inquiries. Out of 774 cultivators recorded in the Viramgam and Bavla centres, 556 (71·8 per cent.) had taken advances, amounting in all to Rs. 1,90,156

of which Rs. 1,72,076 (90·5 per cent.) was borrowed from village sowkars. In Morvi villages, no borrowings are recorded with the exception of one or two small amounts, by way of tagavi, from the State Bank (Rs. 2,025).

The average borrowings per head of cultivators taking advances is Rs. 342.

Borrowings are highest in Hansalpur, Rupal and Derun villages (Rs. 336, 337 and 348 per cultivator recorded) and lowest in Detroj and Bhojva (Rs. 118 and 154 per cultivator recorded).

The average borrowings per acre of cotton, for the different classes of cultivators recorded in the Viramgam and Bavla centres are summarised below :—

	Village.	Average cash advance per acre of cotton.			
		Small.	Medium.	Medium-Large.	Large.
		Rs. a.	Rs. a.	Rs. a.	Rs. a.
Viramgam.	Hansalpur	6 12	14 12	13 4	..
	Bhojva	..	7 5	5 1	..
	Vani	..	15 1	15 0	5 4
	Detroj	21 8	22 10	..	..
	Dumana	12 8	10 4	5 13	1 8
	Dhakdi	..	8 4	5 13	..
Bavla.	Bavla	32 0	26 7	..	..
	Rupal	26 0	29 2	..	..
	Derun	32 5	23 12	9 6	..
	Chaloda	42 0	42 0	..	..
	Visalpur	35 6	20 12	..	28 0

These figures, especially in the Bavla section, are considerably higher than similar data worked out for the Khandesh and Berar tracts and there appears to be no doubt that the cultivators in this tract are in the hands of their financing agents to a much greater extent than in Khandesh or Berar. This opinion is supported by the fact that, although only 63 cultivators record statements that they are under a bond to sell their produce to or through their money-lender, it is often mentioned in the course of the evidence that cultivators are morally bound to sell their kapas or kallas through the person from whom borrowings are made.

Advance sales, either by weight or acreage, are few and this system does not appear to be adopted on a noticeable scale.

Co-operative finance has not been made much use of. Only Rs. 4,400 have been borrowed from co-operative credit societies in two villages.

Rates of interest on loans.

Out of Rs. 1,90,156 borrowed from the village sowkars, Rs. 15,865 (8·3 per cent.) was borrowed at 6 per cent., Rs. 12,575 (6·6 per cent.) at 7 per cent., Rs. 37,630 (19·8 per cent.) at 9 per cent., Rs. 65,740 (34·7 per cent.) at 12 per cent. and Rs. 58,346 (30·6 per cent.) at rates above 12 per cent. The rate of interest charged by co-operative societies was $9\frac{3}{8}$ per cent. per annum.

(5) *Yield of kapas or kallas (bolls).*

The following statement shows the average yield of kallas (bolls) or kapas per acre recorded, in each of the villages under investigation. In addition, the average yield per acre for each class of cultivator in each village recorded is included. Yields are in maunds of 40 lbs. both in case of kapas and kallas :—

	Name of Village.	Average yield per acre recorded.		Average yield per acre of different classes of cultivators (in maunds).							
				Small.		Medium.		Medium-Large.		Large.	
		Kapas.	Kallas.	Kapas.	Kallas.	Kapas.	Kallas.	Kapas.	Kallas.	Kapas.	Kallas
Viramgam.	Hansalpur	..	2.2	..	1.6	..	2.2	..	2.4	..	..
	Bhojva	..	2.9	..	3.5	..	2.8	..	3.4	..	..
	Vani	..	5.4	..	..	..	4.8	..	4.8	..	6.2
	Detroj	..	5.6	..	3.2	..	6.2	..	..	..	..
	Dumana	..	4.	..	2.6	..	4.2	..	4.1	..	3.9
	Dhakdi	..	2.3	..	3.2	..	2.	..	2.4	..	2.2
Bavla.	Bavla	..	11.	..	10.7	..	11.1	..	..	..	..
	Rupal	..	10.4	..	9.7	..	10.5	..	..	..	..
	Derun	..	5.	..	4.5	..	6.5	..	3.4	..	..
	Chaloda	4.8	..	5.	..	4.7	..	2.	..	..	..
	Visalpur	4.	..	4.2	..	4.9	..	2.1	..	..	..
Morvi.	Jetpur	..	·35	..	..	..	.4	..	.4	..	·3
	Dahisara	..	1·9	..	1.	..	1.5	..	2.1	..	2.
	Zankara	..	.9	..	.3	..	1.	..	1.	..	·8
	Barvalla	..	2.9	..	4.	..	2.9	..	2.6	..	..

It will be noted that the crop in Morvi centre was practically a failure and, in Viramgam centre, only very poor yields were obtained. 1 maund of kallas is estimated to give approximately $\frac{5}{8}$ of a maund of kapas.

(6) *Sales.*

As was noted at the commencement of this summary, the record with regard to sales is most imperfect and it has not been possible to apportion any proportion of sales to different periods of the season. However the system of sales at each of the villages under investigation can be indicated from the records and some idea can be formed as to the period of time when the bulk of the crop was disposed of and as to the general level of prices obtained. The main conclusion which appears to be justified is that, unlike Khandesh and Berar, the cultivators in North Gujarat did not hold their cotton for any appreciable time after picking but disposed of it as soon as possible either locally or in some neighbouring market centre. This would appear to confirm the statement previously made that the cultivators of North Gujarat are in the hands of their financing agents to a much greater extent than their brethren in Khandesh and Nasik as, in the majority of cases, the reason for early sale is stated to be on account of the necessity of repaying interest on old debts and repayments to the sowkars. Indeed in such villages as Hansalpur, where the sowkar is also a cotton trader, the cultivators took little or no part in the disposal of their produce but merely handed it over to their money-lender who credited their account with an amount presumably equivalent to its value. Further in North Gujarat there is so little advantage in price by sale in market as compared with local sales that the impression cannot fail to be given that market sales, in a large majority of cases, are made at the dictation of the sowkar rather than at the free will of the grower. Many cultivators state that they themselves know nothing about the marketing of cotton but are in the hands of the sowkar and have to act according to his instructions.

The system of marketing both in the market centre of Bavla and in Morvi State are described in the summary of market investigations and need not be touched upon here.

Statement B appended summarises in as brief a manner as possible the system of sale, the period of disposal of produce and the average prices obtained in each of the villages under investigation. Further details may be obtained from the " note on sales " which form part of the individual village sheets attached* to this summary.

* Not printed.

STATEMENT A.

Cotton Finance Enquiry—North Gujarat.

Summary of Advances.

		Cultivators recorded.			Total amount of advances in village.	Average amount per cultivator recorded.	Source of advances and rates of interest.													
							Sowkar.									Co-operative Society.	Relative		Landlord.	Patadi Durbar.
		With advances.	Without advances.	Total recorded.			6%.	7%.	9%.	12%.	15%.	18%.	22%.	25%.	Over 25%.	9¼%.	12%.	18¼%.		12%.
					Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Viramgam.	Detroj	79	38	117	20,800	118	..	..	..	13,000	..	..	..	470	..	..	7,175	150	..	..
	Dumana	22	22	44	10,300	234	..	..	..	10,300	..	..	..	..	..	..	..	..	..	..
	Hansalpur	41	3	44	14,768	336	..	..	..	2,710	..	4,000	..	8,076	..	..	..	..	..	..
	Bhojva	26	14	40	6,175	154	..	..	..	4,125	..	..	..	..	..	..	100	..	..	1,950
	Dhakadi	26	11	37	7,480	202	..	..	..	1,850	..	..	..	..	..	..	300	..	5,255	75
	Vani	10	5	15	6,440	429	..	..	..	6,440	..	..	..	..	..	..	..	..	..	..
Bavla.	Bavla	88	39	127	33,588	264	2,100	8,575	15,475	2,600	..	2,463	..	2,375	..	..	..	..	..	..
	Rupal	79	21	100	33,710	337	13,765	..	..	15,370	1,700	1,225	..	1,650	..	..	..	..	..	..
	Chaloda	66	34	100	23,545	235	..	4,000	10,370	6,025	900	890	..	500	60	800	..	..	..	..
	Visulpur	75	25	100	17,980	179	..	400	11,785	1,230	..	155	..	110	..	3,600	400	300	..	..
	Derun	44	6	50	17,395	348	..	..	..	2,100	1,300	9,125	1,100	3,770	..	..	..	..	..	..

STATEMENT B (1).

Viramgam Centre.

Name of Village.	Place of Sales.	Time of Sales.	Rates of Sales per maund of 40 lbs.	Remarks.
HANSALPUR (44 Records).	Practically every sale was made at *Viramgam market*. Sales were of "kallas."	Very few sales in January. *Bulk of sales in February*. All sales completed by 14th March. No holding of crop.	January sales (16) averaged Rs. 3-15-3 per maund of kallas. February sales—Rs. 3-15-5. Range Rs. 3-6—Rs. 4-8.	Nearly every cultivator had a bond to sell through his sowkar. In most cases, payment for sales was collected by sowkar and credited to debtor's account.
BHOJVA (40 Records).	Most of sales (31) were made *locally to petty* merchants. (kallas) 10 cultivators sold at Viramgam market.	Bulk of sales made in *early March* (34 cultivators). 2 sales each in January and February. 1 sale in April.	Market (March) (8) Rs. 4-0-6. Local (March) (23) Rs. 4-0-6. February 3 sales Rs. 3-6—Rs. 4. April 1 sale—Rs. 3-8.	Majority of cultivators were tenants of Patadi durbar and gave ½ of produce as "share" to durbar. All sales were of "kallas."
VANI (15 Records.)	12 cultivators sold kallas *locally*, 4 with dalal, 8 without dalal, 4 sold at Viramgam market.	All kallas (except 99 maunds sold in advance) was *sold in February-early March*. No record of any sale after March 15th.	Advance sales :—Rs. 4-2 and Rs. 3-12. February sales :—Local (13) Average Rs. 3-14-8. Market (7) average Rs. 3-14-9.	A considerable amount of kapas 423 maunds was given to landlords by tenants on "share" system.
DETROJ (117 Records).	All sales were made *locally at Detroj* (kallas). No dalals employed. A few (5) sold kapas and (2) sold lint.	All kallas was sold *before middle of March*. Bulk of sales in February. A few advance sales were recorded.	Advance Rs. 3-8—Rs. 4. February-March. 121 sales average Rs. 3-14-0. Kapas sales :—Rs. 5-10-10. Lint sales—Rs. 16—Rs. 16-8.	There were no deductions recorded from sales in Detroj market. No attempt to hold cotton for higher rates. All sales made to 12-15 local merchants at Detroj market.
DUMANA (44 Records.)	All sales made *locally at Dumana* (kallas). One cultivator sold lint at Viramgam market.	Practically all kallas was *sold in early March*.	58 sales average Rs. 3-11-11. Range Rs. 3 to Rs. 4-2. One lint sale Rs. 16-12 per maund. Advance sales Rs. 4-5.	One merchant in the village purchases nearly all the kallas. He opens and takes it for ginning to Viramgam at his own expense. Cultivators paid after 15-30 days.
DHAKADI (37 Records).	Bulk of crop sold, as kallas, *to local merchants*. One or two cultivators took kapas to Viramgam.	Advance sales (230 maunds) in October. Bulk of sales in *2nd fortnight of March*.	Advance :—Rs. 4-4, Rs. 4, Rs. 3-12. March sales (39)—Rs. 3-7-9. Kapas sales Rs. 6 to Rs. 6-2.	Cultivators stated preference for sale in village on account of trouble of marketing. Crop later, no holding for higher prices.

STATEMENT B (2).

Bavla Centre.

Name of Village.	Place of Sales.	Time of Sales.	Rates of Sales.	REMARKS.
BAVLA (127 Records).	All the crop sold, as kallas, *locally at Bavla market*. Only six cultivators sold kapas.	January—2 cultivators. February { 1st half—12 cultivators. 2nd half—20 cultivators. March { 1st half—22 cultivators. 2nd half—56 cultivators. April—15 cultivators.	Rates—Kallas. Rs. 4-4 to 4-7—41 sales. Rs. 4-8 to 4-11—81 ,, Rs. 4-12 to 4-15—49 ,, Rs. 5-0 to 5-3—66 ,, Kapas—Rs. 6-9 to Rs. 8.	Bavla village has a good cotton market. There are 9 ginning factories and 3 presses. No dalals were employed. Market is described in "market summary."
RUPAL (100 Records).	The crop was sold as kallas either at Rupal locally or at Bavla market. The *majority of cultivators* (55) sold at both these places. No dalals employed.	Bulk of sales *took place at end of March*. February 9 sales. March 48 sales. April 38 sales.	Rates—kallas. Rs. 4-0 to Rs. 4-3—71 sales. Rs. 4-4 ,, ,, 4-7—43 ,, Rs. 4-8 ,, ,, 4-11-51 ,, Rs. 4-12 ,, ,, 5-3—58 ,, Range Rs. 3-12 to Rs. 5-4.	28 cultivators sold at Rupal (locally) only and 17 at Bavla only. There were two kapas sales at Bavla recorded at Rs. 6-8 and Rs. 8-1-6 per maund.
DERUN (50 Records).	Kallas were sold *locally at Derun* (26) *or at Bavla market* (22). 2 cultivators sold at both places.	All kallas sold by :— 25-2-26—5 cultivators. 25-3-26—27 cultivators. 20-4-26—16 cultivators. 2 cultivators sold kallas in May 1926.	Rate for kallas varied between Rs. 4 and Rs. 5. 39 local sales average Rs. 4-10-3. 37 Bavla sales average Rs. 4-10-9. May sale—Rs. 4.	Most of cultivators appear to be in the hands of sowkars and sell off their produce at their dictation. Best rates obtained in February.
CHALODA (100 Records).	All sales made in form of *kapas* to petty merchants *locally at Chalóda*. Only one sale at Bavla market.	*Bulk of sales from mid January to end February*. Only two cultivators made any sale in March.	Range of rates (kapas) Rs. 5-12 to Rs. 7-10. 84 sales between Rs. 6-7 and Rs: 6-13. Only 11 sales over Rs. 7-5.	All kapas sales. It appears that crop was all sold off as early as possible to petty merchants (adatyas).
VISALPUR (100 Records).	All sales made in form of kapas. Great *majority 90 per cent. sold at Bavla or Sanand* markets. Only 10 local sales at Visalpur. Dalal was employed in most cases.	All local sales made before 15th February. Great bulk of sales were *made between 1st and 15th February*. Only 6 sales made in March.	Range of rates (kapas) Rs. 6 to Rs. 7. Average Rate—Rs. 6-9. Local sales fetched equal rates to market sales. 6 March sales average Rs. 6-8.	Majority of sales at market although local sales appear to bring just as good rates. Sales made early and there is obviously no attempt to hold cotton for higher prices.

STATEMENT B (3).

Morvi State Centre.

Name of Village.	Place of Sales.	Time of Sales.	Rates of Sales.	Remarks.
JETPUR (97 Records).	Lint sales by means of "Khardas" at "Madvi" Morvi. Auction sale under State supervision.	4th May 1926.	Rs. 7-0-3 per maund lint.	13 cultivators retained all their lint for private use.
MOTA DAHISARA. (78 Records).	Do.	4th May 1926. 25th May 1926.	Rs. 7-9-0 } per maund for "durbari" Rs. 8-1-0 } cotton. On 4th May "bhayati" cotton fetched Rs. 8-12.	"Durbari" cotton, *i.e.*, cotton from ordinary cultivators, tenants at will of the State is liable to State duty of 5 annas per rupee on sale price. "Bhayati" cotton grown by State Bhayats or Inamdars is taxed 15 annas per maund of lint.
ZANKARA (59 Records).	Do. All lint bought by Bavabhai Ishwar & Co., Morvi.	20th April 1926. 25th May 1926. 03 maunds on 20th April 1926. 20 maunds on 25th May 1926.	Rs. 7-3-3 } Rs. 7-0-3 } per maund.	Crop very poor, 21 cultivators kept all their lint, only small amounts for their own use.
BARVALLA (57 Records).	Do.	23rd March 1926. 4th May 1926. 6th May 1926. 482 maunds (70·3 per cent.) 23rd March 1926. 179 maunds (26·2 per cent.) 4th May 1926. 24 maunds (3·5 per cent.) 6th May 1926.	Rs. 8-1-0 } Rs. 7-8-0 } per maund. Rs. 8-3-3 }	All the lint was sold to one buyer. *Note.*—Description of method of marketing cotton in Morvi State will be found under "Market Investigation Summary."

(*b*) *Market Enquiry—Summary.*

A. General Information.

The investigators have submitted general information with regard to only three market centres in North Gujarat :—Bavla, Dhanduka and Koth. In addition, the investigator in Morvi State has furnished a note on marketing cotton in Morvi.

The information received is summarized below :—

(1) There is no regular market in any of the places investigated and therefore there are no rules or bye-laws governing the conduct of trade, etc. No market committees have been formed and disputes and differences are settled by influential local merchants and gin-owners.

(2) *Methods of sale.*—In Bavla market, cultivators and petty merchants bring kapas or kallas (bolls) at night or in the early morning. Sales are effected in the morning between 7 and 12 o'clock. The purchasers go round and sample the carts and settle rates with sellers. There are four dalals or middlemen but their functions seem to be indefinite and the great majority of sales are effected without their intervention. It appears that, in cases of dispute, the services of these dalals are requisitioned for settlement. In Koth market, only petty merchants bring cotton purchased in the villages. There appears to be very little buying or selling here and there are no dalals. The petty merchants store their kapas in ginneries and have their stocks ginned and pressed on their own account. This centre can hardly come under the description of a cotton market. In Dhanduka, cultivators bring kallas for sale in the evening and sales are effected the same night. There are no dalals or middlemen and the kallas is disposed of by public auction. Cultivators are not bound to sell to the highest bidder but in practice, the sale is generally made.

(3) *Deductions.*—In Bavla market, regular deductions are as unders :—

	Kapas. Rs. a. p.	Kallas. Rs. a. p.
(1) Dalali	.. 0 1 6 per maund.	0 1 0 per maund.
(2) Weighing ..	.. 0 2 0 per cart.	0 4 0 per cart.
(3) Heaping (labour)	.. 0 2 0	0 4 0

	Kapas.	Kallas.
	Rs. a. p.	Rs. a. p.
(4) Panjrapol	0 2 0	0 2 0
(5) Charities	0 2 0	0 2 6
(6) Water	0 1 0	0 1 0

In addition 1 per cent. is deducted from price for ready money paid to the sellers.

There appears to be a fairly general complaint about deductions during weighment, due to the fact that the last quantity left in the scales is not allowed for. This loss is calculated to mean ¼ lb. per maund of kapas and ½ lb. per maund of kallas in Bavla market.

There are also several instances of deduction in rate during weighment "kadado" owing to alleged inferior quality. Details of such disputes are given under individual replies.

(4) *Weighments.*—In the markets investigated, there are weighbridges for weighing carts but kallas or bolls are commonly weighed on a "talah" or wooden balance by hand. Many cultivators state that this method of weighment lends itself to fraud and they urge the introduction of improved iron scales.

In Bavla market, weighmen are employed by the gin-owners but paid by the cultivator or seller at the rate of Re. 0-2-0 per cart of 25-30 maunds of kapas or kallas. If the cart exceeds 30 maunds another Re. 0-2-0 is charged. In Dhanduka, the cultivator produces his own weighman who is paid by the buyer at the rate of Re. 0-2-0 per bhar of 16 maunds. (1 maund=40 lbs.).

(5) *Rates.*—As there are no regular markets; rates are not posted in any of the centres investigated and records of arrivals are not kept. The latest Bombay prices are received by telegram by leading merchants.

(6) *Advances.*—Advances are given by gin and press-owners to petty merchants who store kapas in gin compounds for ginning. Such advances generally amount to 75 per cent. of the value of the produce and carry interest from 6-12 per cent. according to the credit of the borrower.

(7) *Storage.*—Apart from the compounds of ginning factories, the only storage accommodation is the shops or "Vakhars" of petty merchants or adatyas where kapas or kallas is collected previous to ginning.

(8) *Opening of kallas.*—In Bavla market, the charge for opening bolls and extracting kapas is Re. 0-9-0 per 60 lbs. (1½ maunds). This rate is not fixed but varies between 8 and 12 annas.

(9) As will be seen from the replies received from individuals the market centres investigated are almost entirely used by petty merchants who purchase kapas or kallas in the villages and bring it in for opening, ginning, pressing and subsequent lint sales. The number of cultivators who use the market is very small. It is to be regretted that the investigators were not able to conduct inquiries in a larger number of sale centres as the evidence recorded is insufficient to enable a real appreciation of cultivators' marketing difficulties to be formed.

B. Cotton Marketing in Morvi State.

(10) The marketing of *all* the kapas or kallas grown in the State is conducted by auction, under State control, at Madvi in Morvi proper. Local dealings in cotton are not permitted and each village has a committee, consisting of the revenue patel and four other leading cultivators, who prepare "khardas" or lists showing the quantity of lint for sale by each individual grower in the village. These lists are sold by auction at Madvi, where auction sales are held twice a week—on Tuesdays and Fridays—during the season before the State authorities, the Bank Manager and the Customs Officer. As there are only three large buying firms in Morvi, all of whom are well acquainted with the quality of lint from each village in the State, sales are made from the "khardas" only and the lint itself is not brought to the press until later when the purchaser requires it. The State levies a duty of 5 annas in the rupee which is paid by the purchaser. This duty is taken into account during the auction and the prices offered are reduced accordingly. The cultivators therefore suffer the burden of the monetary loss amounting to nearly one-third of the value of their crop. The purchase money is received by the village committee about 15 days after the sale of the "kharda" and is distributed by them to the cultivators in proportion to the amount of lint entered in the "khar-

da " by each individual. At times, especially in bad years, when the growers require money to meet assessment charges, etc., the " khardas " are mortgaged to the State Bank or to a purchasing firm. The lint is weighed out to the agent of the buyer in the presence of the village committee at the cultivators' houses and is packed into gunny bags, each containing 23 maunds of lint. The cultivators are obliged to deliver the lint at their own expense to the buyer at the State Press in Morvi usually during the months of April to June. The furthest villages are 36 miles from Morvi and the nearest 5 miles. Pressing charges, amounting to Rs. 12 for each lint bale of 380 lbs., are borne by the purchasers. This system has come into force during the past 16 years and is now compulsory. The chief complaint of the cultivator is the heavy duty, payable to the State, which is almost entirely borne by the growers.

C. Individual Replies.

(11) Only one market centre, Bavla, was selected for the purpose of recording replies from individuals bringing cotton to Market. The following statement gives the dates of inquiry, the number of individuals recorded, growers and petty merchants and the total amount of kapas or kallas brought by those recorded each day of inquiry :—

Date of Inquiry.	Individuals bringing cotton recorded.			Amount brought.	
	Grower.	Petty Merchant.	Both grower and petty merchant.	Kallas in maunds (40 lbs.).	Kapas in maunds (40 lbs.).
3rd March 1926	1	44	..	..	1,129
8th March 1926	2	44	..	..	1,208
13th March 1926	3	43	..	..	1,226
19th March 1926	6	37	3	415	856
27th March 1926	7	19	2	131	603
28th March 1926	2	15	1	565	320
10th April 1926	..	31	2	195	696
11th April 1926	..	13	..	..	345
23rd April 1926	6	32	..	119	845
24th April 1926	2	5	..	..	178
	29	283	8	1,425	7,406

The above statement shows the large percentage of petty traders, *i.e.*, who had purchased the cotton they were bringing to market (88.6 per cent.) as compared with actual cultivators who had grown it (9.1 per cent.). The small percentage of kallas, *i.e.*, bolls (16.2 per cent.) as compared with kapas (83.8 per cent.) is also noticeable.

(12) *Rates received.*—The actual rates received by the sellers for their produce were recorded in each case. These rates were the ones accepted by the seller at the time of sale and are exclusive of subsequent deductions which are dealt with at a later stage of this summary. The highest, lowest and average rates recorded, both for kapas and kallas sales on the days of the inquiry are tabulated below :—

Date of Inquiry.	Number of records.	Recorded Rates per maund of 40 lbs.								
		Kapas.						Kallas.		
		High.		Low.		Average.		High.	Low.	Average.
		Rs. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.	Rs. a. p.	Rs. a. p.
3rd March 1926	45	7 15 3		6 8 6		7 8 5		..	..	..
8th March 1926	46	8 5 0		7 8 0		7 15 0		..	..	..
13th March 1926	46	8 4 0		6 9 0		7 11 0		..	..	..
19th March 1926	46	7 13 3		6 13 3		7 7 0		4 14 0	4 3 3	4 12 0
27th March 1926	28	7 5 6		6 8 0		6 14 0		4 11 6	4 10 6	4 11 0
28th March 1926	18	7 6 6		6 4 0		7 0 0		4 12 3	4 7 6	4 10 2
10th April 1926	33	6 14 9		6 2 6		6 7 7		4 8 0	4 4 6	4 5 10
11th April 1926	13	7 11 3		6 1 6		6 10 7		..	..	..
23rd April 1926	38	6 14 3		5 9 3		6 8 0		4 1 0	3 13 3	4 0 0
24th April 1926	7	6 14 6		6 2 6		6 9 7		..	..	..

The general reduction in rates, as the season advances, which was brought out in the village investigation, is verified by the above records. The rate at Bavla market for opening kallas and extracting kapas is approximately annas 9 per 60 lbs. ($1\frac{1}{2}$ maunds) of kallas. Taking this charge into consideration, the cultivator, selling kapas, in preference to kallas, gains 1-2 annas per maund on the above-quoted rates.

(13) *Deductions.*—The general recognised market deductions at Bavla market are as under :—

	Kapas. Rs. a. p.	Kallas. Rs. a. p.
(1) Brokerage	0 1 6 per maund	0 1 0 per maund.
(2) Charity	0 2 0 per cart.	0 2 6 per cart.
(3) Panjrapol	0 2 0 ,,	0 2 3 ,,
(4) Water	0 1 0 ,,	0 1 0 ,,
(5) Labour heaping, etc...	0 2 0 ,,	0 4 0 ,,
(6) Weighing	0 2 0 ,,	0 4 0 ,,

These figures are approximate and vary slightly with the actual weight of the cart.

In addition, discount of 1 per cent. is taken if cash payment is made.

In addition to these recognised deductions, there are also deductions in weight and in money taken from the cultivators. Records have been taken of the weight of kapas or kallas which the individual said he had brought to market and of the weight which was finally accepted by the purchaser.

These records are tabulated herewith.

Statement of Weight Reductions of Kapas and Kallas, when weighed, in Bavla Market as compared with Weighment at Village.

Date.	Number of individuals recorded.		Records of reductions in weight in Bavla Market.									
	Total.	With Reduced Weights.	Kapas.					Kallas.				
			Maximum. In seers.	Average. In seers.	Number of records of reductions. Over 20 seers.	10-20 seers.	Under 10 seers.	Maximum. In seers.	Average. In seers.	Number of records of reductions. Over 20 seers.	10-20 seers.	Under 10 seers.
3rd March 1926 ..	45	44	42	11.6	3	21	20	..	..	..	..	..
8th March 1926 ..	46	46	37	16.	14	23	9	..	..	..	..	..
13th March 1926 ..	46	45	36	12.6	9	20	16	..	..	..	..	..
19th March 1926 ..	46	46	30	12.3	3	16	11	34	14.5	4	8	4
27th March 1926 ..	28	27	15	8.1	..	7	16	21	11.	1	2	1
28th March 1926 ..	18	14	8·5	5.5	..	..	10	16	10.2	..	2	2
10th April 1926 ..	33	32	26	8.3	2	6	18	35	18.	1	5	..
11th April 1926 ..	13	10	24	10.9	2	3	5	..	..	..	..	..
23rd April 1926 ..	38	37	26	11.4	5	14	13	33	25.	5	..	..
24th April 1926 ..	7	7	22	15.6	2	4	1	..	..	..	..	..
	320	308	..	..	40	114	119	..	..	11	17	7

Thus, out of a total of 320 individuals recorded, 308 (96·2 per cent.) stated that the weight recorded in Bavla market and accepted by the purchaser was less than the actual weight they had brought to market. Of these 308, 51 (16.2 per cent.) lost over 20 seers, 131 (42·8 per cent.) over 10 seers but under 20, and 126 (41 per cent.) under 10 seers. In view of this, there would appear to be justification for the complaints recorded in the village investigation regarding fraudulent and faulty weighing at the market centres.

In Bavla market, deductions were also made, both in kind and in cash, during and after weighment. These deductions "kadado" were the result of disputes with regard to the quality of the produce.

Records of such deductions have been kept in the case of individuals recorded and are given below :—

On 3rd March 1926 :—Reductions of this nature were :—

	Re.	a.	p.	
(45 records).	0	6	9	per maund—2 cases.
	0	6	0	per maund—1 case.
	0	2	3	per maund—2 cases.
	0	2	0	per maund.
	+			6¼ lbs. kapas—1 case.
	0	2	0	per maund—1 case.
	0	1	6	per maund—1 case.
	0	1	0	per maund.
	+			4 lbs. kapas—1 case.
	0	1	0	per maund—4 cases.
				8 lbs. kapas—1 case.
				4 lbs. kapas—1 case.

On 8th March 1926 :—13 cases of reduction ranging from Re. 0-1-3 (46 records.) to 0-6-0 per maund.

On 13th March 1926 :—13 cases of reduction ranging from (46 records.) Re. 0-1-3 to 0-4-3 per maund.

On 19th March 1926 :—8 cases of reduction Re. 0-1-9 to 0-8-0 (46 records). per maund also 6, 4 and 12 lbs. kapas.

On 27th March 1926 :—3 cases of reduction Re. 0-1-6, 0-2-6 (28 records). per maund and 7 lbs. kapas.

On 28th March 1926 :—No cases. (18 records).

On 10th April 1926 :—6 cases of reduction Re. 0-1-0 to 0-3-3 (33 records). per maund.

On 11th April 1926 :—1 case of reduction Re. 0-1-3 per maund. (13 records).

On 23rd April 1926 :—10 cases of reduction Re. 0-1-0 to 0-3-3. (38 records). per maund.

On 24th April 1926 :—2 cases of reduction Re. 0-4-0 and 0-1-0 per maund.

These deductions, during or after weighment, are neither so frequent nor so heavy as in Khandesh or Berar and do not form the subject of general complaint on the part of the sellers. It is unfortunate that the investigators were not able to obtain similar records from other market centres in North Gujarat so as to give a wider idea of the marketing system and its difficulties in the tract under inquiry.

(14) *Advances.*—There is no record of any individual having taken an advance on kapas or kallas brought to market.

APPENDIX VI.

Oldham Master Cotton Spinners' Association, Ltd.

Spinning Tests of Indian Cotton, March, 1926.

Firm making Test.	Growth.	Per cent Loss up to Card Sliver.	Nominal counts.	Actual Counts at Spindle Point.	Lea Strength Test in lbs.	Actual Turns per inch.	Estimated Value compared with price of current Month Futures, Universal Standard.			
							Staple.	Grade and Colour.	Working.	Nett Value.
No. 1.	*American Boweds* ..	*8·5*	*Weft 25*	*25·26*	*54·9*	*17·5*	*40 on*	*40 on*	*20 on*	*100 on*
			„ 24	*24·31*	*52·5*	*16·25*				
			„ 25 hard.	*26·01*	*57·0*	*22*				
			Twist 30	*30·77*	*41·5*	*23*				
	Gadag No. 1	16·375	Weft 25	25·82	53·4	17·5	40 on	60 off	20 on	pass.
			„ 24	24·89	54·3	16·25				
			„ 25 hard	26·06	58·6	22				
			Twist 30	30·84	44·8	23				
	American Boweds ..	*8·5*	*Weft 28*	*28·37*	*54*	*22*	*40 on*	*40 on*	*20 on*	*100 on*
			„ 26	*26·90*	*57*	*23*				
			„ 25	*25·23*	*61*	*17·5*				
			„ 30	*30·98*	*43*	*19*				
	285 F (*Punjab-American.*)	13·5	Weft 28	29·04	60·3	22	80 on	30 off	300 off	250 off
			„ 26	26·32	74	23				
			„ 25	24·75	72	17·5				
			„ 30	30·08	49	19				
No. 2	*American Texas* ..	*9·56*	*Twist 30*	*28·87*	*57·75*	*20·3*	*80 on*	*30 on*	*25 on*	*135 on*
			„ 24	*22·68*	*76·75*	*17·18*				
	1027 ALF (Surat) ..	12·37	Twist 30	31·37	41·75	20·3	40 on	30 off	25 on	35 on
			„ 24	24·31	66·75	17·18				

Oldham Master Cotton Spinners' Association, Ltd.

Spinning Tests of Indian Cotton, March, 1926—contd.

Firm making Test.	Growth	Per cent. Loss up to Card Sliver.	Nominal counts.	Actual Counts at Spindle Point.	Lea Strength Test in lbs.	Actual Turns per inch.	Estimated Value compared with price of current Month Futures, Universal Standard.			
							Staple.	Grade and Colour.	Working.	Nett Value.
No. 3.	*Mid. American* ..	*10·125*	*Twist 12½*	*12·88*	*129·5*	*13·35*	*35 on*	*pass.*	*pass.*	*35 on*
			„ 16	*16·93*	*95·25*	*15*				
			Weft 11	*11·76*	*136·25*	*10·8*				
			„ 12	*18·91*	*70·75*	*13·5*				
	Sircar 14	1st Test 23·3125	Twist 12½	13·74	132·5	13·8	25 on	175 off	pass	150 off
			„ 16	17·77	100·12	15				
			Weft 11	12·39	136·	11·65				
			„ 17	18·35	98·37	13·30				
		2nd Test 20·25	Twist 12½	12·34	146	13·85				
			„ 16	16·25	110·12	15·15				
			Weft 12	12·80	137·25	11·25				
			„ 16	16·50	103·5	12·50				
	Sircar 25	1st Test 13·375	Twist 11½	12·31	126·5	12·65	pass.	50 off	pass.	50 off.
			„ 15½	16·65	92·62	14·65				
			Weft 10	10·94	144·5	11.15				
			„ 16	17·20	84	12				
		2nd Test 12·125	Twist 12½	12·88	125·5	12·75				
			„ 16	17·65	83·62	14·95				
			Weft 12	13·23	112	11				
			„ 16	17·50	73·25	12·10				
No. 4. ..	*Universal Mid. Bow eds.*	*8*	*Weft 24*	*24*	*58·75*	*19·37*	*20 on*	*pass*	*pass*	*20 on*
			„ 22	*21·9*	*61·75*	*17·6*				
	Cambodia No. 1 ..	12·05	Weft 30	29·9	52·75	22·2	15 on	pass	10 on	25 on
			„ 24	24·84	54·75	19·3				
			„ 20	20·9	70·25	16·5				
	Dharwar No. 1 ..	17·3	Weft 24	25·15	54·75	19·9	pass	150 off	50 off	200 off
			„ 22	23·3	60	19·3				

TESTS ON INDIAN GROWN COTTON.

March 1926.

SPINNERS' COMMENTS. No. 1 FIRM.

—	On the Raw Cotton.					On Behaviour in Working.	On the Yarns Produced.
	Staple (Ins.)	Seed and Leaf.	Colour.	Ginning.	Generally.		
Gadag No. 1 ..	1 1/16	Shy of Mid. Am.	Cream.	Good.	If a whiter strain could be cultivated and leaf and seed kept out in greater degree, this cotton would make an excellent substitute for S.M., Boweds.	Worked well.	Will spin counts up to 30's. Strength slighty better than Boweds, Colour and Cleanliness inferior to Mid. Boweds. Resultant yarns contained more neps and bits of seed, and was not so level as American with which it was compared.
285F (Punjab-Am.)	1 3/16	About equal to Mid. Am.	Light Cream.	Good but too many stain spots.	Too full of minute pieces of seed with hairs attached which ruin the evenness and appearance of the yarn.	Worked well.	The yarn from this cotton is very disappointing. Nep is much more prevalent than would appear likely, looking at the cotton in the bale. The fault is very pronounced on web of card. The side shaft and barrow wheels on card were altered so that effect could be noted, but no improvement resulted. Three cards were tried but the result was the same in each case.
					No. 2 FIRM.		
1027 ALF(Surat). ..	1 1/16	Leafy.	Creamy.	Unsatisfactory.—Leafy in patches, 2" in diameter.	The leaf seems to hang in patches, but with a good cleaning plant can be separated with success.	The behaviour during carding and spinning was very good, but was considerably softer than the Texas cotton spun at the same time.	Anything over 30's will, in our opinion, begin to show the Indian cotton 1027 ALF to disadvantage. The strength will be seen to be about 11 lbs. below the test from American cotton of Texas growth. Growths of cotton other than American, do not generally command the same price when the staple and grade are considered equal.

TESTS ON INDIAN GROWN COTTON.

March 1926.

SPINNERS' COMMENTS. No. 3 FIRM.

	On the Raw Cotton.					On Behaviour in Working.	On the Yarns Produced.
	Staple (Ins.)	Seed and Leaf.	Colour.	Ginning.	Generally.		
Sircar 14	1 1/8	Highly charged with broken leaf and seed.	Dull Cream.	Badly ginned. Good Cotton spoiled.	Diameter of fibre fine. Natural twist very low. Nature of fibre firm and sound, very strong.	Works very well in carding and spinning but will not stand much twist or drag. Spins tight and compact.	This cotton would spin 36/38 Weft or 30/32 Twist more suitable for Twist. Stronger than American; is much darker in colour and carries considerably more leaf. Would estimate its market value at ¾d. per lb. under yarn made from American much depending upon the purpose it was used for.
Sircar 25	1 1/16	Much fine leaf and seed.	Creamy.	Moderate—could be improved.	Diameter of fibre moderate. Natural twist moderate. Nature of fibre pliable.	Works very well with same twist and speed of machinery as American.	Would spin a good 32/34 Weft and 26/28 Twist. Strength equal to Mid. Amer. Colour is creamier with slightly more leaf in the yarn. We would say that yarn would be worth ¼d. per lb. under the American quality much depending on the purpose it was used for.

TESTS ON INDIAN GROWN COTTON.

March 1926.

SPINNERS' COMMENTS. NO. 4 FIRM.

—	ON THE RAW COTTON.					On Behaviour in Working.	On the Yarns Produced.
	Staple (Ins.)	Seed and Leaf.	Colour.	Ginning.	Generally.		
Cambodia No. 1 ..	Full 1	Beautifully clean, almost free from leaf and seed.	Beautiful creamy white.	Very good indeed.	Very fine silky texture, and good spinning cotton up to 30's counts. Nice staple, good creamy white, bright and clean, not too lossy in spinning processes. Staple very regular. A good substitute for Amer. Boweds except a little too creamy.	Good spinning cotton. Equal to Universal Mid. Boweds Amer. in spinning, but not in colour; required less twist than Dharwar or Universal Mid. Boweds.	Colour rather creamy, but bright and nice lustre. Thread moderately level and free from nep, fairly clean. Strength not quite so good as Amer. Boweds. A marketable yarn up to 30's counts.
Dharwar No. 1 ..	1	Much broken leaf and seed, also much sand.	Dull heavy creamy colour which is objectionable.	Not satisfactory, too much broken leaf, seed and sand.	Rather fine silky texture; spins fairly well up to 24's counts. Nice staple. Its bad colour, broken leaf seed and sand are very objectionable, making the cotton very lossy in spinning process. Staple very regular, but not fit to substitute American Boweds owing to the above faults.	Spins fairly well but makes far too much loss in sand and leaf. This cotton requires more twist than Cambodia or Universal Mid. Boweds American.	Dull brown colour. Thread rather unlevel in 24's counts. Moderately clean, lacking lustre and free from nep. Strength not quite so good as Amer. Boweds. A marketable yarn up to 24's counts.

SPINNING TESTS OF INDIAN COTTONS.

May 1926.

Firm making Test.	Growth.	Per cent. Loss up to Card Sliver.	Nominal Counts.	Actual counts at Spindle Point.	Lea Strength Test in lbs.	Actual Turns per inch.	Estimated Value compared with price of current month Futures, Universal Standard.			
							Staple.	Grade and colour.	Working.	Nett value.
A.	Good Mid. American Texas	Per cent. 8	Twist 36	37	44.25	22.70	....	....	..	..
			Weft 38	38.8	41.00	20.67				
			Weft 40	41	39.75	21.45				
	285 F. Punjab American	14.09	Twist 36	35.4	49.25	23.17	130 on	Pass	75 off	55 on.
			Weft 38	37.45	49.25	21.9				
			Weft 40	39.2	45.00	22.05				
B.	289 F. Punjab American	14.75	....	..	..	..	....	....	..	..
C.	Mid. American 1.3-16″	10.45	Ring Twist 32	..	56	23.3	....	....	..	..
	285 F.	16.66	,, ,, 32	..	55	23.3	....	....	..	..
	289 F. Punjab American	16.00	,, ,, 32	..	60	23.3	....	....	..	..
D.	American		Weft 28	29.00	37½	18	....	....	..	..
	Georgia		Weft 24	26.16	45	17				
	285 F. Punjab American	13.9	Weft 28	30.33	48¾	18	....	....	..	..
			Weft 24	27.04	59	17				
	289 F. Punjab American	18.4	Weft 28	32.24	47	18	....	....	..	..
			Weft 24	27.07	58½	17				
E.	285 F.	12.5	Twist 24	22.6	71	17.58	V. Good.	S. Low Mid. Fair colour.	Good.	50 on.
			Twist 40	34.7	54.5	20.86				
			Weft 40	38.2	42.5	20.9				
			Twist 28	25.0	65.4	19.4				
	289 F.	14	Twist 26	25.01	67.3	19.4	Good ..	Middling ..	Good ..	50 on.
			Weft 36	33.1	51	19.3				
			Weft 30	27.9	57.6	19				
			Twist 26	24.2	68.5	19.4				

TESTS ON INDIAN GROWN COTTON.

Spinners' Comments.

	Staple (Ins).	On the Raw Cotton.				On Behaviour in Working.	On the Yarns Produced.
		Seed and Leaf.	Colour.	Ginning.	Generally.		
285 F (Punjab American).	Full 1 1-8" to 1 3-16".	Large amount ..	Dull Cream..	A. Firm. Could be improved.	Silky texture, fibre very strong.	Works very well in carding and spinning, requires much less twist than American Texas.	Would spin 46' to 48's weft or 38's to 40's twist; more suitable for twist yarns. Thread fairly level, a little nep showing in our opinion through faulty ginning.
289 F (Punjab American.)	1 5-16" dia. x fine.	Too much leaf and seed.	Dull Cream	B. Firm.	Twist good but tests only taken up to Intermediate bobbin.	....	We think would spin 54's to 70's Twist yarn under proper conditions and with better ginning.
285 F	1 1-8" ..	....	All practically alike but American has less lustre.	C. Firm.	.... ..	Difficulty with 285F—Fibres falling away apparently less natural twist.	The American is easily the cleanest and most even yarn. The two Indian cottons are similar, both are uneven, very neppy indeed with plenty of leaf still showing.
289 F (Punjab American.)	1 1-8" ..	....	....	....	....	No trouble.	
285 F (Punjab American).	1 3-16" ..	Equal to Mid. American.	Light Cream	D. Firm. Good	Contains a large amount of stain.	Worked well	Very much finer counts can be spun than here reported upon but excessive nep seriously prejudices the value of this cotton.
289 F (Punjab American).	1 3-16" ..	Equal to Mid. American.	Light Cream	Good ..	Rather dirtier than 285. F but not so many stains.	Good	Do.
285 F (Punjab American).	....	....	....	E. Firm.	....	....	Compares very favourably with American Boweds for Weft yarns being bright and of good colour and staple. Quite up to staple Boweds, suitable for 40's weft.
289 F.	....	....	....	....	....	....	More suitable for Twist yarns, being longer in staple than Boweds and equal in strength to Good 1 1-8" Texas. Suitable up to 36's Twist.

APPENDIX VII.

ANNUAL REPORT OF THE DIRECTOR, INSTITUTE OF PLANT INDUSTRY. INDORE, FOR THE YEAR ENDED JUNE 30TH, 1926.

I. INTRODUCTION.

The second meeting of the Governing Body took place at Indore on October 9th, 1925, when the budget for 1926-27 was passed and proposals for the expenditure of the balance of the capital grant of Rs. 2,00,000, namely Rs. 20,851 were discussed. To this balance of Rs. 20,851 saving from the ordinary budget for 1925-26, namely Rs. 29,888 were added making a total sum of Rs. 50,739 available for capital expenditure. The general lines on which the remainder of the capital should be expended were settled at the meeting and the Director was instructed to prepare detailed plans and estimates which were afterwards circulated and approved. Orders were at once placed and most of the work has been completed. Before the end of the rains of 1926 it is hoped to prepare the final statements of capital expenditure and to close this account.

II. ERECTION OF BUILDINGS AND LAYING OUT THE LAND.

The whole of the Institute and farm buildings including one block of workmen's quarters and two chaukidars ' houses have been completed and fitted up. The gin house will be handed over in a few days.

The electrification scheme of the Institute and of the various cotton gins has been completed with the exception of connecting on to the motors which are shortly expected. The scheme entailed the erection of 3,580 feet of mains. Half the cost of the mains used in common was contributed by the Daly College.

Two large pucca wells, each over 20 feet in diameter, were completed during the year. Both have behaved well in an exceedingly dry season when many of the local wells ceased to give water early in the hot weather. These and one of the old wells are being provided with Boulton Elevators driven by a portable 5 H.P. oil engine and will prove of great use in irrigation work on cotton. In addition to these wells there are three more old *pucca* wells in the area which can be deepened, improved and brought into use in future years as funds and time permit.

A bullock gear which drives the threshing machine, corn grinder and chaff cutter has been erected and is now in use.

The additions and alterations to the old Thagi jail have been completed at a cost of Rs. 3,000. Four large married quarters, six quarters for bachelors and four out-houses for menials have been provided which are now being occupied by members of the staff and by the research students. The jail compound has also been handed over to the Institute free of rent. This is now being fenced and will provide a useful grazing area for the work cattle. A second grass paddock has been handed over to the Institute for grazing purposes free of cost. These two areas have already proved of great use in providing fodder for the work cattle.

The plan of the final lay-out of the area was completed during the rains of 1925 and the position of the plots, roads and paths marked by permanent stone pillars. This work was carried out by Mr. K. R. Joshi, Assistant in charge of Field Experiments and of the Seed Farm, under the supervision of Rai Sahib J.N. Bose of the Railway Survey and his staff. One of the members of the Railway Survey staff (Mr. Ball) prepared the final plan which has been of the greatest use. A beginning was at once made with the actual lay-out and at the time of writing (June 30 1926) this is rapidly approaching completion. The work has involved the construction of 6,965 feet of metalled roads, 1,260 feet of metalled paths, four small bridges, four culverts, 4,530 feet of small drainage canals, 34,395 feet of surface drains, 13,149 feet of earth roads and the erection of 25,650 feet of fencing. About 4,500 feet of fencing, about half a mile of earth roads and two short pieces of metalled road remain which will be taken on hand this rains as soon as the sowing of the *kharif* crops has been completed.

III. Cotton Investigations.

A survey of the work on Indian cotton published during the last twenty years reveals the important fact that with the exception of the pioneering work of Sampson and Clouston (which appeared many years ago) and the recent work of Roberts at Khanewal and of the Bombay Agricultural Department at Surat very little attention has been paid to the agricultural aspects of this crop. Almost without exception, recent investigations have been confined to the

discovery of better cottons, to seed distribution and to various cotton pests. A short experience of cotton growing on the black soils has convinced me that there is a large and profitable field of investigation in the actual growing of cotton on these soils in addition to the investigations on botany, physiology and genetics of this crop which form the main work of the Institute. Attention has therefore been paid to the growing of cotton and actual results are beginning to appear. In this way it will be possible for the Institute to pay dividends in the early years of its existence while the researches on the improvement of the plant are being developed.

The improvement of cotton growing.

The eradication of kans and the deep cultivation of black soils.

One of the chief obstacles to cotton growing in Central India, Bundelkhand and parts of the Central Provinces is a perennial deep rooted grass known as kans (Saccharum spontaneum). At a conservative estimate the reduction in the yield of cotton caused by this weed is at least a third of the crop. The implements at the disposal of the cultivator only serve to keep kans in check, they do not eradicate it. Attempts are now being made in various parts of India to bring this weed under control by means of tractors but the method is expensive and not very suitable for the ordinary villager. As more than half the area of the land leased to the Institute was infected with *kans* and quite unfit for experimental work, the eradication of this pest was at once taken up. The funds available were insufficient to consider either the purchase of a tractor or the local method of digging out the weed by hand. Some cheaper method had to be devised. The first attempts were made with heavy soil-inverting ploughs :—Ransomes' steel bar plough and the C.T. plough were tried each drawn by two pairs of oxen. The results were unsatisfactory and the amount of work done each day was small. The failure of these ploughs was partly due to the great force needed to turn a deep furrow and partly to the fact that when two separate pairs of oxen are yoked to the same plough there is a good deal of non-co-operation and the animals rarely pull together. A little consideration of the problem soon led to the conclusion that furrow inversion—so essential in the damp soils of the Occident for killing weeds by cutting off the light—is quite unnecessary in India where the sun does the same work for nothing once the weeds are uprooted.

Soil inversion besides requiring a large amount of draught interferes with levels and is particularly harmful on black soils by producing large clods which often prevent the work cattle from walking on the cultivated surface. These difficulties were overcome by the use of an adjustable *bakhar* capable of working to a depth of 8 to 9 inches drawn by *two pairs of oxen working abreast.* This *bakhar* was obtained by dismantling and slightly altering the P. & O. 10 inch ridging plough manufactured by the International Harvester Company and on sale in India at forty rupees each. The broad share of this plough acts as a very efficient *bakhar* blade. The draught is supplied by four oxen walking abreast provided with a long yoke, nine feet four inches long by one foot seven inches deep fitted with iron pins which prevent the oxen getting off the yoke when turning. Under this system non-co-operation disappears, the animals work together and exert their maximum power. The arrangement will be clear on referring to the photograph appended* to this report. This adjustable *bakhar* is proving very effective in *kans* eradication and this adverse factor is rapidly being eliminated. The most effective periods for dealing with this weed appear to be during the time of active growth in the rains or at the beginning of the cold weather.

The adjustable *bakhar* drawn by four bullocks walking abreast is all that is required for the occasional deep cultivation of black cotton soils. More expensive machinery does not appear to be necessary, and in future any well-to-do cultivator can obtain all the benefits of a tractor, without any of the disadvantages of this costly and uncertain machine, for the trifling sum of forty rupees. The complete ridging plough will also be useful in growing cotton on flat beds in tracts where the provision of a little surface drainage is found to increase the yield.

Soil colloids and the growth of the cotton plant.

Observation of the cotton crop on the black soils suggests that the formation of soil colloids during the rains is the principal factor which retards growth and limits the yield. This is particularly the case in years of heavy rainfall when growth is very slow, the plants are stunted, the yield is low and the bolls open late. At present the grower is at the mercy of the rainfall and the yield is a

* Not printed.

matter of chance. What is wanted is to furnish the cultivator with some weapon by means of which the position can be partly or entirely reversed. Perhaps the easiest way of dealing with this problem is to apply a small dressing of a suitable oil cake *in a finely divided condition* which will tend to put the colloids out of action and also supply nitrogen in a readily available condition. *Karanj* cake, a local oil-cake obtained from the seeds of a leguminous tree (*Pongamia glabra*) applied at the rate of five maunds per acre has greatly improved the vegetative growth and increased the yield of cotton by more than 25 per cent. The effect on the crop of small dressings is much greater than would be expected from the chemical composition. Crushing in an ordinary mortar mill reduces this cake to the requisite fine state of division. Plantations of this tree have been started at Indore so as to determine the yield of seed per acre and the increased cotton crop which can be obtained. The seed contains about one-third of its weight of oil which is being examined by Dr. Simonsen at the Indian Institute of Science, Bangalore, with the object of stimulating the trade in this product. It is likely to be suitable for lubrication and for the manufacture of soap. There seems little doubt that a small plantation of this tree will be sufficient to provide manure for a comparatively large area of cotton and that it will pay the cotton grower to devote attention to this valuable species. In many parts of the black soil tracts there is ample land for the purpose.

The preparation of organic matter for the cotton crop.

One of the directions in which the yield of cotton can be markedly increased is to supply the soil with fermented organic matter in a finely divided condition. These matters have already been worked out empirically in China and Japan and are described in King's *Farmers of Forty Centuries*. All that is needed is to apply this work to Indian conditions and to make use of all existing raw materials. Almost any form of organic matter is suitable for the purpose. All that is needed is to mix the material with earth, ashes (when available), a little cowdung (to start the fermentation in the right direction) and water. The final result is a finely divided manurial earth rich in nitrogen and organic matter. Fresh *san* hemp has yielded a promising product containing 0·97 per cent. of nitrogen which is now being applied to cotton. Water

weed from the local river gave similar results, the compost in this case containing about 0·5 per cent. of nitrogen. The experiments with cotton stalks are not yet complete. All the weeds and refuse organic matter produced on the Experiment Station are now as a matter of routine converted into valuable manure and in due course find their way to the cotton fields. There is at present a serious waste of manure going on in India due to the fact that raw unfermented materials are applied to the soil. This practice is incorrect. The soil cannot prepare food materials and grow a crop at the same time. To attempt to make the soil do so is to overwork the land. The Chinese discovered the secret of avoiding this common mistake. They never overwork their fields and confine their activities of the soil to its proper function, namely, that of growing a crop. The preparation of food materials for the plant is always done outside the field. The successful introduction of this principle into Indian Agriculture would lead to a great increase in the production of cotton. As results accumulate on this subject at Indore, they will be published.

The improvement of the cotton plant.

During the season of 1925 about 80 acres were sown with *Malvi* cotton obtained from Kannod in the Nimawar District of the Indore State. Although the total rainfall was only 15 inches the yield was satisfactory and there seems no doubt that this mixture will well repay detailed study. The various constituents have been isolated and will this year be grown from single plants. The increase in the length of fibre above the mean of the mixture which can be obtained by selection methods is not likely to be considerable. The possibilities in improvement of the yield per acre and in the fineness of the fibre, however, are considerable.

Besides the work on *Malvi* a beginning has been made in the collection of unit species of the indigenous Indian cottons a number of which have been sent in by the Agricultural Department. At the present time the area under small cultures in connection with the plant breeding and selection work is nearly six acres. This includes 1,252 single plant cultures. Among these are a number of *bani* cultures, a variety which grows well at Indore and which is now being studied.

In 1927 and succeeding years the culture work will be divided into two groups (1) rains cottons and (2) cottons suitable for growth

under well irrigation. In this way the range of types available for study will be greatly increased and it will be possible to include American varieties.

IV. Research Students.

At the present time three Research Students (Messrs. Bapubhai Desai, Idnani and Talesara) appointed by the Central Cotton Committee are working in the Institute. Two of these students hold ordinary research scholarships while Mr. Bapubhai Desai has just been appointed to a Senior Scholarship. Messrs. Idnani and Talesara worked in the Institute as volunteers without pay up to June of this year and I am glad to report that they are making good progress and promise well.

V. Publications.

In the Presidential Address to the Indian Science Congress which met at Bombay in January 1926 an attempt was made to define the nature of the problems which await solution by the Agricultural Department and to deal with the draw-backs of specialisation in research work. The examples selected to illustrate the main theme of the paper were canal irrigation and disease in plants, two questions which are intimately connected with the research work undertaken by the Indian Central Cotton Committee. Some suggestions were made as to the best method of approaching present day problems, a matter which bears on the selection of scientific workers for cotton investigations in India and on the training of research students. Copies of this paper are appended to this report.

Two short notes were published in the *Agricultural Journal of India* on the composting of organic matter and on the origin of alkali land.

A short paper onthe cotton growing problems of the black soils was read at the Indian Science Congress at Bombay and included in the bulletin recently published by the Central Cotton Committee. This paper is being reprinted in the *Agricultural Journal of India.*

A. HOWARD,

Director, Institute of Plant Industry, Indore, and Agricultural Adviser to States in Central India.

Supplement to the Annual Report for the year ended June 30th, 1926.

In submitting the last annual report it was mentioned at the meeting of the Central Cotton Committee in July 1926 that a supplementary report would be desirable on one or two points. This was due to the fact that insufficient time had elapsed between the completion of the experiments and the writing of the report. I am glad to report that no qualifications are necessary and that the results in question namely, those on the eradication of *kans* and on the new method of green manuring for cotton are even more successful than I had hoped.

There is no doubt that the new four bullock yoke and the deep subsoiler, which have been devised at the Indore Research Institute, constitute a notable advance in Indian Agriculture which will soon be taken up all over the country. The complete outfit was shown at work at the recent Agricultural Exhibition at Poona and attracted much favourable notice. A paper on the subject was also read before the Agricultural Section of the Indian Science Congress at Lahore. So far orders for 22 complete outfits have been received. In addition, orders have come in for 11 yokes. A note on this subject with an illustration* of the yoke and new plough is appended.

As regards the new method of green manuring with *san* which has been worked out at Indore, the cotton on the experimental plots has not yet been completely picked. The weight of the crop so far gathered, however, leaves no doubt as to the great value of the method. I hope to have all this in print shortly and to append a paper with full details to the annual report for the year ended June 30th, 1927.

A. HOWARD,

Director, Institute of Plant Industry, INDORE.

* Not printed.

THE ERADICATION OF KANS (Saccharum spontaneum L.).

By ALBERT HOWARD, C.I.E., M.A.,

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One of the chief obstacles to the growth of cotton and other crops in Central India, Bundelkhand and parts of the Central Provinces is a perennial deep-rooted grass known as *kans* (*Saccharum spontaneum* L.). At a conservative estimate the reduction in the yield of cotton caused by this weed is at least a third of the crop. The implements at the disposal of the cultivator only serve to keep *kans* in check, they do not eradicate it. Attempts are now being made in some parts of India to bring this pest under control by means of tractors but the method is expensive and not very suitable for the ordinary villager.

As more than half the three hundred acres leased to the Institute of Plant Industry were infested with *kans* and quite unfit for experimental work, the eradication of this weed was at once taken up. The funds available were insufficient either to consider the purchase of a tractor or to adopt the local method of digging out the weed by hand which costs about eighty rupees an acre. Some cheaper method therefore had to be devised.

The first attempts were made with heavy soil-inverting ploughs—Ransomes' steel bar plough and the C. T. plough were tried, each drawn by two pairs of oxen in the usual manner. The results were unsatisfactory and the amount of work done each day was small. The failure of these ploughs was partly due to the great force needed to turn a deep furrow and partly to the fact that when two separate pairs of oxen are yoked to the same plough there is a good deal of non-co-operation and the animals only occasionally pull together. A little consideration of the problem soon led to the conclusion that furrow-inversion—so essential in the damp soils of the Occident for killing weeds by cutting off the light—is quite unnecessary in India where the sun does the same work for nothing once the weeds are loosened or uprooted. Soil-inversion besides requiring a large amount of draught interferes with levels and is particularly harmful on black soils after the rains by producing large clods which prevent the work cattle from walking on the cultivated surface.

These difficulties were overcome by the use of an adjustable *bakhar* capable of working to a depth of 8 to 9 inches drawn by two pairs of oxen *walking abreast.* This *bakhar* was obtained by dismantling and slightly altering the P. & O. 10-inch ridging plough manufactured by the International Harvester Company and on sale in India at forty rupees. The broad share of this plough when the wings and sole are removed acts as a very efficient and self-cleaning *bakhar* blade and uproots the dense mass of *kans* rhizomes which run mostly in the upper eight inches of soil. The depth of working is adjusted by the front wheel. The yoke is attached to the sub-soiler by a strong chain of suitable length. The draught is supplied by four oxen walking abreast provided with a long yoke, nine feet four inches long by one foot seven inches deep fitted with iron pins which prevent the oxen getting off the yoke when turning. Under this system non-co-operation disappears, the animals work together and exert their maximum power. One of these sub-soilers will plough an acre of land a day at Indore at a cost of somewhat below five rupees. This adjustable *bakhar* is proving very effective in *kans* eradication at Indore and this adverse factor is rapidly being eliminated. Plots infested with *kans* in September 1925 were fit for cotton cultures by June 1926. The most effective periods for dealing with this pest appear to be during the time of active growth in the rains or at the beginning of the cold weather but this and many other matters relating to this weed need further investigation.

The adjustable *bakhar* drawn by four bullocks walking abreast is all that is required for the occasional deep cultivation of black cotton and other Indian soils. More expensive machinery does not appear to be necessary and in future any well-to-do cultivator can obtain, for the trifling sum of forty rupees, all the benefits of a tractor or steam plough without any of the disadvantages of these costly and uncertain machines. The deep cultivation involved in the eradication of *kans* produces other useful results. The land becomes remarkably free from weeds and the cotton crop is considerably benefited. The complete ridging plough is also proving very useful at Indore in growing cotton on flat beds separated by furrows. The additional surface drainage so provided is followed by better root-development and by increased growth.

APPENDIX VIII.

Institute of Plant Industry, Indore.

Programme of Future Work.

The programme of cotton investigations submitted to the Central Cotton Committee in 1923 is given below :—

The aim of the Indore Institute (as regards cotton investigations) is to provide a centre of research for the black soil tracts. At this centre any problems suggested, either by the Central Cotton Committee or by other workers in India can be taken up. A special effort will be made to create a good library dealing with the various aspects of cotton production for the use not only of workers at the Institute itself but also of other investigators on cotton in India.

While the Institute will always be prepared to consider any useful suggestions as regards problems to be investigated, the following preliminary programme is put forward. This falls into four parts.

(*a*) *Botanical Survey.*—Up to the present, little or no attempt has been made in India to isolate, classify and study the unit species which form the frame work of the various species and varieties of cotton found on the black soils. It is true that the Indian cottons have been classified and surveyed from the point of view of systematic botany, but this is entirely inadequate for modern work as by this method cottons of very different agricultural value are not distinguished. The work needs to be carried much further and nothing short of the isolation and study of the unit species will meet the case. This work has a direct practical bearing. It will, in all probability, lead to the isolation of useful types for distributions. It will also provide material for the plant breeder and for critical work on the physiology and agronomy of cotton.

(*b*) *Plant Breeding.*—Two main practical problems will be taken up at once :—

(1) the creation, establishment and maintenance of an island of long staple cotton on the Malwa plateau. The types

isolated will be available for other areas in India and the crop will enable a grade of improved cotton to be established for the mills and for the shippers;

(2) the improvement of the fibre of the hardy Roseum type which is, in all other respects, admirably suited for the low-lying areas of Central India.

In the solution of these questions the inheritance of characters will have to be studied. The results will apply not only locally but will also be of general interest.

(*c*) *The Physiology of the Cotton Crop.*—In order to increase production something more than improved varieties is needed. The new varieties must be provided with suitable conditions for growth. To discover these the physiology of the cotton plant must be studied and the factors which now limit production must be determined. This involves the study of root development, the relations of the root system to the soil type and the influence of factors such as soil moisture, soil aeration and drainage, soil texture and soil temperature on growth. Included in these studies is the discovery of factors which produce the shedding of buds, flowers and bolls. During the course of these physiological studies, the general nutrition of the cotton plant will be considered and how far the yield can be improved by manuring and other methods of soil treatment.

(*d*) *The Influence of Environmental Factors on the Lint Characters.* Modern industries demand a uniform product. Once this is obtained the purchase of raw material as well as the details of manufacture are simplified. In the case of cotton, any tract which can produce uniform lint will rapidly establish its reputation in the trade. It is well known, however, that the cotton fibre alters in character according to the soil on which it grows and to some extent according to the season. Further work is desirable on this matter with the object of discovering what factors bring about these changes, which varieties are most easily affected and whether any practical remedies exist for improving the uniformity of the fibre of the same cotton. This portion of the work is of direct bearing on the question of the maintenance of grades of cotton for the highest class of spinning in this country.

APPENDIX IX.

Technical note on the various provincial research schemes financed by the Indian Central Cotton Committee.

Bombay Research Schemes.

The three officers in charge of the investigations and some of the technical assistants have been placed on special duty by the Government of Bombay, their salaries being met from the Committee's grants and their substantive posts temporarily filled by departmental promotions. The other members of the staff have been employed on short term contracts.

Surat Physiological and Entomological Research Schemes.—These two schemes are closely related. The object of the former is a study of bud, flower and boll shedding and of means for reducing the consequent loss of crop. As the *Earias* Bollworms are responsible for a considerable amount of shedding it is convenient to discuss the two schemes together. It has been ascertained that of the total flower buds produced only some 10 per cent. yield mature bolls and that of the flowers that actually open only about 40 per cent. result in mature bolls. It has also been shown that successful flower and boll production is limited to a comparatively short period. Thus in 1924 flower buds were formed from September 1st to December 30th but only during a period of about seven weeks from the end of September did any material production of flowers (30 per cent. of the buds) take place. Similarly flowers which opened after the end of December produced an insignificant proportion of bolls. During the active period of flower production about 50 per cent. of the flowers produced mature bolls and over the whole flowering period about 43 per cent. It appears that the *Earias* Bollworms are responsible for a loss of about 30 per cent. of flower buds which only represents one-third of the total shedding. On the other hand a loss of 30 per cent. of flowers and bolls from this pest is distinctly significant. Further work is in progress from which it is hoped definitely to ascertain the loss which takes place when normally grown cotton plants are protected from *Earias* attack. The physiological work has definitely shown that shedding is not due either to disease or to defective pollination of the flower. Climatological data including rainfall, humidity, air and soil temperatures, evapora-

tion, cloud and soil moisture have been carefully recorded as it is likely that the main factors determining shedding are environmental. Most of the work has been carried out on one "pure line" selections from the local cottons but other strains have been under observation also. The work on the *Earias* Bollworms has elicited a good deal of new information on the life history of these three insects and of their parasites. Control measures require very careful study as, owing to the very short time between the harvesting of one crop and the sowing of the next, the natural carry-over is large.

Dharwar Research Schemes.—The two research schemes at Dharwar deal with plant breeding work for the improvement of the staple of the Bombay Upland cottons and a mycological study of the cotton wilt disease respectively.

The first scheme deals with the working out of a cross between a local strain of American Upland and Sea Island. The F^4 generation is now under observation so that it is impossible to say more than that the cross is promising.

The second investigation is a study of the cotton wilt disease which is the only generally important disease of cotton in India.

At Dharwar the problem is being attacked from three aspects :—

(1) The isolation by selection or the creation by hybridisation of immune or less susceptible strains. The Bombay Agricultural Department's Cotton Botanist at Dharwar has already made considerable progress with the plant-breeding side of the work. The mycological staff provided from the Committee's grant co-operates in testing strains for immunity.

(2) Work on the fungus itself. There is a good deal of evidence that at Dharwar the fungus (Fusarium) is definitely causative. Work on the conditions of growth of the fungus and on the method of infection of the plant was started first.

(3) Work was also started later to determine the conditions under which cotton suffered seriously from the disease (which is spasmodic in character) and whether the loss caused can be reduced by indirect methods. The work is still in progress.

Sind.

The Lloyd Barrage canal system eventually will revolutionise cotton growing in Sind as perennial irrigation will replace the present uncertain water supply from inundation canals and a large additional area will come under irrigation. It is estimated that the irrigated cotton area will reach eventually some 700,000 acres. In consultation with the Indian Central Cotton Committee the Government of Bombay has provided a new research station at Sakrand for the investigation of the many problems arising from this radical change in the agricultural system of Sind. The station is provided with a perennial water supply by pumping from a lake thus enabling canal conditions to be reproduced in advance of the completion of the Barrage canals. The Indian Central Cotton Committee has given a grant of Rs. 20,000 per annum for a period of five years to provide a plant physiologist, staff and equipment for research on cotton physiology which they believe to be of extreme importance to cotton-growing in new canal areas. The staff has not yet been appointed.

Madras.

Herbaceum Botanical Research Scheme.—This scheme provides for plant-breeding work on the Herbaceum constituent of the various Madras cottons especially of the Northerns and Westerns type. (Many Madras cottons are mixtures in varying proportion of G. Indicum, G. Herbaceum and natural crosses.) The types under study have a particular value for those areas where the rainfall is low or uncertain and work has been directed to the study of " Unit species " and the isolation of strains of superior staple by pure line selection. During the current season some strains will reach the field test stage. The staff for the scheme has been partly obtained on deputation from the Madras Department of Agriculture and partly on short term contracts.

Pempheres and Physiological Scheme.—This scheme, work on which will start very shortly, provides for a Physiological Botanist and a Biochemist with botanical, chemical and entomological assistants for the study of a group of problems. Work on bud, flower and boll shedding has been carried to a certain stage by the Cotton Specialist to the Madras Government in the course of other work and the results published; this work will be continued and extended.

(2) The cotton stem weevil, "*Pempheres affinis*," threatens to be a limiting factor on cotton production at Coimbatore and there is a risk of its becoming a major pest in other parts of India. The life history has been worked out already but no direct control measures appear possible. An important line of enquiry is the resistance to attack and power of recovery shown by certain strains of cotton, and investigations from both the botanical and chemical aspect have been arranged for. Concurrently certain further entomological data will be collected with special reference to the utilisation of the Madras Pest Act against this insect. The staff for this scheme is now being recruited.

United Provinces.

The Pink Bollworm is by far the most important insect pest of cotton in many parts of India, and is most destructive in the United Provinces and the adjoining part of the Punjab, where, as in Egypt, long cycle larvæ are responsible for most of the carry-over from season to season. The Government Entomologist, United Provinces, had already made this a major item of his research programme. The Indian Central Cotton Committee provided two non-recurring grants in the first instance to provide insect-proof cages, and subsequently a recurring grant and a further non-recurring grant, for special experiments in seed control and disinfection. An additional grant has recently been sanctioned to enable an additional Entomologist (one of the Committee's Research Students) to be employed for the further development of this work. The preliminary results obtained indicate that the loss of crop is at least 20 per cent. whilst the crop that is secured is very seriously lowered in quality. It has been calculated that effective control of the pest would add anything from 25 to 60 per cent. to the cash value of the crop. Results indicate that seed treatment alone would enable a very considerable reduction in the bollworm population to be effected provided that such treatment can be organised on sufficiently extensive a scale. Field experiments to confirm this result are now in progress and further data on flight distribution are being accumulated. The practical point to be determined is whether the treatment of all cotton-seed (in the ginneries) would be sufficient or whether the compulsory removal of the old cotton crop before a certain date is also essential. Legislation may be necessary eventually and it is of the utmost importance that the scientific data should be complete.

Punjab.

Botanical Research Scheme.—The earlier work of the Punjab Agricultural Department has led to the establishment in that province of nearly a million acres of Punjab-American cotton (acclimatised Upland American) of about 1″ staple grown with canal irrigation and producing some 300,000 bales of cotton annually. This is the largest single addition to the Indian supply of medium-stapled cotton. The whole area is canal-irrigated and the average yield relatively high. The area for the current year is 1,066,000 acres and the estimated yield 328,000 bales.

Various difficulties in regard to both yield and quality in certain years led the Indian Central Cotton Committee to the conclusion that a special cotton research staff was required to deal with the various problems of American cotton-growing under canal colony conditions. A non-recurring grant of Rs. 29,300 was made which provided a special field laboratory and apparatus. The recurring grant of Rs. 45,000 provides for the Cotton Research Botanist, Botanical Assistants and for laboratory contingencies. The Punjab Government have provided a special plant-breeding area on the Agricultural College estate and a farm of 200 acres for testing and multiplication of strains and for field experiments. The Punjab Government have also provided a gazetted agricultural officer as Chief Assistant to the Cotton Research Botanist and meet all cultivation charges. They have also provided a good deal of the initial expenditure connected with the scheme. An exception has been made in this instance and the Cotton Research Botanist has been recruited by the Committee and lent to the Punjab Government. Mr. Trevor Trought (recently Senior Botanist for the Ministry of Agriculture, Egypt, Cotton Research Board) was appointed Cotton Research Botanist, Punjab, in August 1925.

Punjab Entomological Research Scheme.—Working under the Government Entomologist, Punjab, one of the Committee's Research Students, showed that the Pink Bollworm though at one time reported to be of negligible importance in the Punjab is now a major pest in the South-East Punjab and present in appreciable numbers, though only a minor pest at present, in the canal colonies. A grant has been made for an investigation of the factors which limit the spread of the insect under canal colony conditions and work

has been started this year, the Research Student referred to having been appointed Assistant Entomologist for the scheme. The investigation is complementary to the work at Cawnpore and its importance lies in the fact that should this insect become a major pest in the canal colonies (as it is in the United Provinces and South-East Punjab at present) the yield and value of the Punjab-American crop would be very seriously reduced.

Central Provinces and Berar.

The annual grants to the Central Provinces Department of Agriculture have provided for two Research Schemes, *viz.*:

(1) A Botanical investigation of the Central Provinces and Berar cottons with special reference to the improvement of the staple of the Oomra type.

(2) A study of cotton wilt in the Central Provinces and Berar. The Committee's grant has enabled the Economic Botanist to Government, Central Provinces, to be relieved of other work and to devote the whole of his time to cotton research of which he had previous considerable experience. The assistants required have been placed on deputation by the Local Government and are paid from the Committee's grant. The Local Government also placed at the disposal of the Economic Botanist for Cotton the Akola farm in Berar with an adequate annual grant for upkeep and cultivation expenses, a plant-breeding area, laboratory, etc., at Nagpur and certain facilities on other farms. A complete survey of the Oomras cotton is in hand and considerable progress towards the production of superior types has been made. The Oomras tract is the largest homogeneous cotton tract in India the general history of which has been the steady replacement of cottons of superior staple by inferior but hardier types and the reversal of this process will only be achieved as the result of thorough and patient experimental work.

(2) The cotton wilt investigation is being carried out by the Mycologist to Government, Central Provinces, and the Committee's grant provides for two assistants and for apparatus and contingencies. Preliminary results indicate that the course of this disease in the Central Provinces and Berar is distinctly different to that in the Karnatak and the problem has been attacked from the physiological aspect. The results so far are not conclusive.

Burma.

A small non-recurring grant of Rs. 3,000 has been made for apparatus for the examination of the cotton fibre and an assistant from the Burma Agricultural Department is at present under training in the Committee's Technological Laboratory in the methods of fibre testing now in use there. The officers carrying out plant-breeding work on cotton in Burma are at a disadvantage owing to the great distance from Bombay and on the return of the assistant now under training part of the initial work on the fibre characters of Burmese cottons will be done locally.

General.

The progress made on the various Research Schemes is periodically reviewed by the Central Cotton Committee and it so happens this year that a number of important reports will come up for consideration somewhat later than usual. Hence the above summary is not up to date in all respects.

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APPENDIX X.

List of Research Students.

Year of appointment.	Name.	Where posted.	Branch of cotton research in which scholarship granted.	How now employed.	Remarks.
1923.	Sohan Singh Bindra, M.Sc. ..	Lyallpur.	Cotton Entomology.	Entomological Research Assistant.	
,,	Mohammed Afzal, B.Sc. ..	Punjab.	Cotton Botany (Plant Breeding).	Punjab Government scholar at Imperial College of Tropical Agriculture.	
,,	Sheo Shanker Pande, M.Sc. ..	Nagpur.	Do.	Senior Research Assistant, Central Provinces Botanical Scheme.	
,,	Jiwan Singh, M.Sc.	Do.	Cotton Mycology.	Senior Mycological Assistant, Central Provinces Mycological Scheme.	
,,	Habonto Banerji, M.Sc.	Coimbatore.	Cotton Botany.	Senior Research Student (Cotton Cytology), Indore Institute of Plant Industry.	
,,	B. B. Desai, B.Ag.	Dharwar.	Do.	Senior Research Student, Indore Institute of Plant Industry.	
1924.	Atul Chandra Dutta, M.Sc. ..	Coimbatore.	Do.	(No record.)	
,,	N. Hari Rao, M.Sc.	Technological Research Laboratory, Matunga, Bombay.	Textile Physics.	Junior Research Assistant, Technological Research Laboratory, Matunga, Bombay.	
,,	H. D. Nangpal, B.Sc.	Cawnpore.	Cotton Entomology.	Research Assistant, Pink Bollworm Scheme, United Provinces.	
,,	Sant Bahadur Singh, B.Sc. ..	Surat.	Cotton Physiology.	.....	Resigned to go to Cambridge for further study.

APPENDIX X—*contd.*

List of Research Students—*contd.*

Year of appointment.	Name.	Where posted.	Branch of cotton research in which scholarship granted.	How now employed.	Remarks.
1925.	Vishwa Ram Singh, L.Ag. ..	Cawnpore.	Cotton Entomology.	Research Student.	
,,	Akbar Ali, B.Sc.	Lyallpur.	Cotton Botany (Plant Breeding).	Do.	
,,	Kedar Nath Trehan, M.Sc. ..	Do.	Cotton Entomology.	Do.	
,,	S. E. Kumana, B.A., B.Sc. ..	Technological Laboratory, Matunga, Bombay.	Cotton Technology.	Do.	
,,	J. D. Ranadive, B.Ag.	Dharwar.	Cotton Physiology.	Do.	
,,	P. K. Roy, M.Sc.	Technological Laboratory, Matunga, Bombay.	Textile Physics.	.....	Resigned.
,,	K. R. Sen, B.Sc.	Do.	Do.	Research Student.	
,,	L. N. Rao, M.Sc.	Do.	Cotton Microscopy.	Lecturer in Botany, Central College, Bangalore.	
1926.	D. F. Kapadia, B.A., B.Sc. ..	Do.	Cotton Technology.	Research Student.	
,,	Ram Saran Koshal, M.Sc. ..	Do.	Textile Physics.	Do.	
,,	M. A. Shama Iyengar, B.Ag. ..	Surat.	Cotton Physiology.	Do.	
,,	Karam Singh Lamba, B.Sc. ..	Lyallpur.	Cotton Entomology.	Do.	
,,	Y. D. Wad, M.Sc.	Coimbatore.	Cotton Bio-chemistry.	Do.	
,,	H. A. Idnani, B.Ag.	Institute of Plant Industry, Indore.	Cotton Botany.	Do.	
,,	S. C. Talesara, B.Ag.	Do.	Do.	Do.	

APPENDIX XI.

Progress in the Introduction of Improved Varieties of Cotton in Various Provinces.

BOMBAY—(1) *Gujerat.*—The policy of the Agricultural Department to establish 1027 A.L.F. cottons in the whole tract below the Narbada was continued during the year. The Rajpipla and the Baroda States took effective measures to distribute this seed in their territories. The Co-operative Cotton Sale Societies in the Olpad Taluka continued to grow seed which is somewhat inferior to 1027 A.L.F. but they were persuaded to try 1027 A.L.F. seed on a fairly large scale and some of them have taken more seed for further trial in the coming season. The Agricultural Department controlled 11,600 acres of private seed farms. The resulting seed from this area, amounting to 1,900,000 lbs., was distributed mostly in the tract below the river Narbada.

For the Broach tract (north of the Narbada up to Mahi river), a pure type of superior staple "B.D. 91" has been evolved on the Broach Farm. Seed of this type will be multiplied on the whole area of the farm this year and will be available for distribution in the Broach District next year.

For the Dholleras tract (North Gujerat beyond Mahi and the major portion of Kathiawar) four pure strains of Wagad cotton were tested under cultivators' conditions. Of these two strains have been rejected and the other two better strains, *viz.*, Pt. 4 and Pt. 8, are now being grown for multiplication on 150 to 200 acres during the current year.

(2) *Southern Division.*—The cultivation of selected types of Kumpta and Dharwar-American varieties of cotton, known respectively as selected Kumpta (Dharwar No. 1) and Upland (Gadag No. 1) is rapidly extending round Hubli and Gadag. The District staff of the Agricultural Department and the Cotton Sale Societies at Hubli and Gadag continued to work together for their extension. Each of these societies started during the year 19 seed depots and distributed seed through the depots and through seed societies. The area under these improved types of cotton amounted to 119,532 acres in the case of Dharwar No. 1 and 97,400 acres in the case of Gadag No. 1,

Extra profits realized by cultivators from the cultivation of these improved varieties during the year are estimated to be Rs. 8,57,000 and the demand for pure pedigree seed is increasing rapidly.

Distribution of Dharwar No. 1 cotton seed was extended during the year to a few villages in Athani, Chikkodi and Gokak talukas of the Belgaum District and a few villages of Indi, Bijapur, Bagalkot and Bagewadi talukas of the Bijapur District. The growth in all these villages was satisfactory and the demand for Dharwar No. 1 cotton seed is likely to increase in these two districts also. A new cross—Dharwar No. 1 × Rosea strain No. 15—which gives a ginning percentage of 33 and has got a staple of 1", was multiplied on Gokak Farm and 1,500 lbs. seed have been reserved for distribution round Gokak and Bailhongal in Belgaum District, where experiments with this cotton have been very successful. This cross has all the good qualities of the parents.

(3) *Khandesh.*—The distribution of pure Roseum (N.R.) cotton seed continued on a larger scale. About 257,000 lbs. of this seed, sufficient to cover an area of about 18,000 acres, have been distributed by the Department through registered seed growers, seed unions and Taluka Development Associations. In addition, a large quantity of N.R. seed was distributed by cultivators from the balance of seed remaining with them.

Experimental work, directed to obtaining a type of cotton of superior staple and suitable to local conditions, has resulted in the isolation of two promising strains, BXX·27 and BXI 9·34. BXX. 27 was tried on a field scale on Jalgaon Farm and, as the results were encouraging, a further trial is being made with this strain on about 60 acres on cultivators' fields over the district. BXI 9·34 will be tried on a field scale for the first time during this year on Jalgaon Farm.

MADRAS—(1) *Tiruppur Cambodia Area.*—(*a*) *Cambodia.*—The work of improvement of Cambodia cotton began seven years ago. The Agricultural Department enters into yearly contracts with selected ryots by which the ryots receive cash advances of Rs. 15 per acre towards the cost of inter-cultivation operations, and in turn agree to sow the seed supplied by the Department on " seed farms" under departmental supervision. The kapas is ginned co-operatively and the seed is sold to the Department at a premium of Rs. 2

per *pothi* of 250 lbs. The lint is sold in public auction duly notified on behalf of the ryots concerned. The lint produced is of the best quality, as is testified by the high prices paid and by the eagerness with which auction sales are attended by the representatives of the Bombay and other millowners. At the auctions held during the past seven years, the departmental cotton has always fetched a price of at least Rs. 20 per candy over the prevailing market rate.

219,500 lbs. of seed were purchased from the seed farm ryots in 1925-26 and the major portion of this was distributed for sowing. About 7,000 acres were sown with this seed in 1925-26 of which 1,151 acres were sown under seed farm conditions. Besides these, the extent under natural conditions spread with this improved strain is estimated at 5,000 acres, making 12,000 acres in all. About four-fifths of this area is under strain 295 (Co. 1) and the remainder under strain No.15. 77,704 lbs. of seed of improved strains of Cambodia, sufficient to sow 7,500 acres, were distributed in the Trichinopoly District this year by the Department as well as by some of the ryots.

(*b*) *Karunganni.*—Karunganni cotton is steadily making head way in the dry lands of the districts of Coimbatore and Trichinopoly, displacing dry land Cambodia and Uppam. In Coimbatore, 4,150 acres were under Karunganni in 1925-26. Seed farms were organized for this variety also and 813 acres were under seed farms in the Coimbatore District. 1,250 lbs. of Karunganni seed, sufficient to sow 125 acres, were distributed in the Trichinopoly District.

(2) *Tinnevelly Area.—Company cotton or Karunganni.*—Pure seed (selected Co. type) is distributed by the Agricultural Department, the Seed Unions and by ryots who gin co-operatively and sell jointly. Nine seed unions were working during the year and sold 130,928 lbs. of seed. The total quantity of pure seed distributed by the above-noted agencies in the districts of Madura, Ramnad and Tinnevelly was 298,267 lbs., sufficient to sow an area of 29,826 acres of pure crop. The indigenous cotton crop in these districts is a mixture in which Karunganni has now become the predominant variety.

(3) *Northerns and Westerns Area.*—(*a*) *Northerns Tract.*—In the Northerns tract 12,700 acres were sown under "Nandyal 14"

cotton as against 20,180 of last year. This cotton is well suited for red and mixed soils. The yield was higher than last year owing to the favourable season. 380 bales of N.14 lint were sold by the Department at a premium of Rs. 40 per candy of 500 lbs. The remaining quantity was sold by the ryots themselves at a premium of about Rs. 35 to Rs. 40 per candy.

(*b*) *Westerns Tract.*—The selection Hagari 25 was grown on 179,363 acres. A greater area would have been sown if the season had commenced earlier. An average premium of Rs. 20-8-0 per bale of 400 lbs. was realized on lint sold by the Department, but the cotton sold by the ryots fetched only a premium of Rs. 4 to Rs. 11 per bale on account of the unsatisfactory finance of the cotton grower and consequent mixing and adulteration of his crop with inferior varieties of cotton.

Irrigated Cambodia.—As compared with 1922-23, the area under irrigated Cambodia in 1925-26 showed increases in all districts, from 100,273 to 100,366 in Coimbatore, from 13,462 to 42,360 in Salem and Trichinopoly, from 22,096 to 36,967 in Madura, from 21,201 to 29,269 in Ramnad and Tinnevelly and from 157,119 to 210,280 in the Presidency.

PUNJAB.—The area under Punjab-American cottons has continued to expand, being 1,065,700 acres in the year 1925-26. The increase is due to very large profits got in the previous years by the growers. The principal variety 4F (which was first given out in 1913) was grown on an area of 1,048,700 acres. The later selection 285F (given out in 1921) appears to be hardier, more drought resistant and a higher yielder, but is not yet popular. It was grown on an area of only 12,000 acres. Similarly the still later selection 289F, which is just being given out, is a heavier cropper than either 4F or 285F and its lint is much better than 4F and rather better than 285F. It was grown on about 5,500 acres.

The tendency in the Punjab now is to grow American cottons even when the land is unsuitable and irrigation supplies inadequate.

Work for the improvement of indigenous cottons has been continued and the "Mollisoni" variety, which is an improved strain of indicum, is being grown on a larger scale than before. Similarly in the south-east of the province, where, on account of lack of irri-

gation facilities, American cotton cannot be grown, a variety of Desi Roseum cotton is becoming popular. The Agricultural Department alone supplied to the farmers seed of this variety sufficient for an area of 21,000 acres. This is in addition to seed kept by the farmers themselves for their own use.

UNITED PROVINCES.—The progress in the introduction of improved varieties of cotton in these provinces has been satisfactory. A.19 continues to enjoy the popularity it has achieved by reason of its high yield and high ginning precentage. At least 30,000 acres were under this variety last year; the area was probably much greater since seed is being distributed by a large number of growers from whom no definite records are received. This variety will now spread rapidly over most of the great cotton-growing tract in the west of the province. In that tract cotton is sown partly on canal irrigation and partly when the rains break. A rapid-growing, quickly maturing cotton is required in each case; on the canal irrigated fields the cultivator expects to sow a rabi crop, in December after cotton is finished; late monsoons and early cold weathers frequently make the growing season in the unirrigated areas extremely short. A.19 ripens very quickly once the rains are over; it yields a large percentage of its crop in a short time. In addition it germinates readily and gives a good stand of plant in the hot, dry months of May and June, when moisture is difficult to conserve. These characteristics make it well suited to the western districts, which grow more than 50 per cent. of the total cotton of the province.

In the central circle the cultivation of J.N.1. is progressing; the area under this variety has increased from 2,000 acres in the previous year to about 3,000 acres this year.

The strains recently isolated in the Botanical Section of the Department are being tried under different environmental conditions. In parts of the Rohilkhand division certain types are appreciated on account of their high out-turns. One of the types known as C.402 yielded as much as 1,184 lbs. per acre, and in the spinning trials was found suitable for 22s.

There is no likelihood of an extension of the area under Cawnpore-American. This variety requires special irrigation facilities, and therefore cannot compete with other types under ordinary

conditions; it is now of little practical importance in the United Provinces.

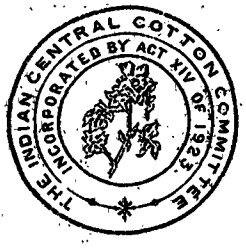
BURMA.—Three new strains are now under trial on a field scale. The area under improved Wagale has increased to 5,000 acres and the area under Cambodia is now 6,000 acres. A deterioration in the quality of the latter crop has been reported by the ginning firms and the matter is receiving the attention of the Agricultural Department.

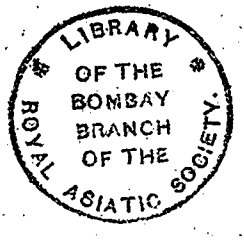
HYDERABAD STATE.—The policy of the Agricultural Department is to encourage the production of pure Bani (Hyderabad Gaorani) and to eliminate the short-stapled Khandesh variety (*Neglectum roseum*) by supplying large quantities of pure Gaorani seed to cultivators on Takavi. In the districts of Nanded, Osmanabad, Parbhani and Bir, it is estimated that at least 350,000 bales of pure Bani have been produced during this season.

BARODA STATE.—The State has for several years consistently followed the policy of co-operating with the Bombay Department of Agriculture in its attempts to improve the quality of the Surat cottons by introducing the 1027 A.L.F. variety. This policy was continued in such areas of the State as lie interlaced with those areas dealt with by the Bombay Department of Agriculture in the Surat and South-Surat areas. Attention has now been turned northwards and over 171,000 lbs. of improved cotton seed was distributed chiefly in Mangrol Taluka. It is intended to make special efforts to replace as much of the cotton area in Mangrol with improved cotton seed as possible.

RAJPIPLA STATE.—In co-operation with the Bombay Department of Agriculture the Rajpipla State had, by a special ordinance issued some years ago, made it illegal to sow Goghari or other short-stapled cottons in any part of the State. The 1027 A.L.F. improved variety of Surat cotton has now practically displaced the local short-stapled varieties with the result that the quality and reputation of the Rajpipla cotton have greatly improved and it is now recognized as equal to the best Surat and is much sought after.

13 JAN 1928





ANNUAL REPORT

OF THE

Indian Central Cotton Committee,

BOMBAY,

FOR THE

YEAR ENDING AUGUST 31st, 1927.

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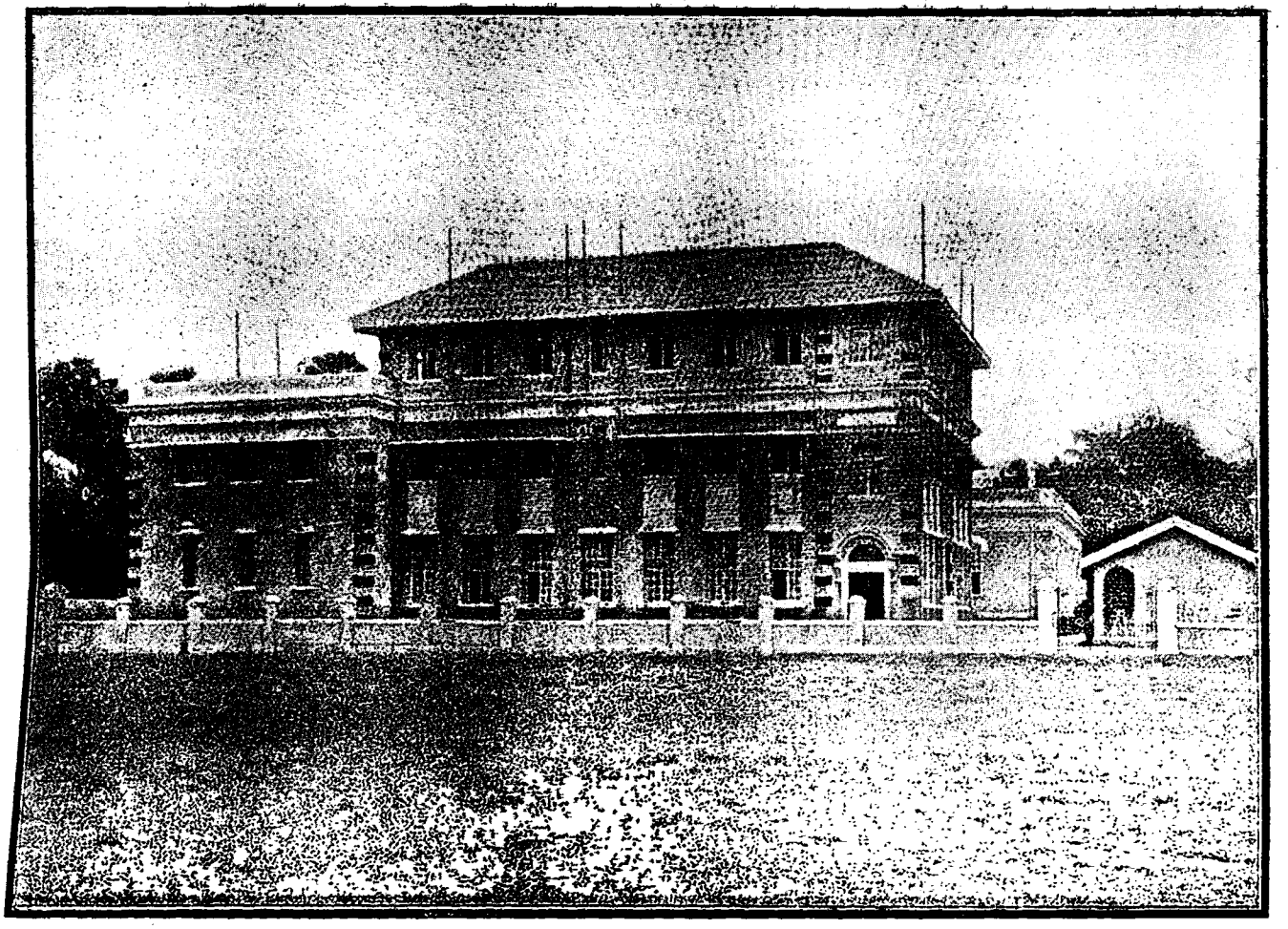

Technological Laboratory, Matunga.

ANNUAL REPORT

OF THE

Indian Central Cotton Committee, Bombay,

FOR THE

Year ending August 31st, 1927.

CONTENTS.

	Page.
Personnel	1
Sub-Committees	4
Staff	7
The work of the year	9
Cotton Transport Act	11
Cotton Ginning and Pressing Factories Act	15
Finance of the cotton crop and primary cotton marketing	19
Open cotton markets	20
Marketing of improved varieties of cotton	21
Measures to prevent the introduction of the Mexican boll-weevil	22
Prevention of the introduction of foreign insect pests in imported cotton-seed	23
Cotton statistics	24
Collection and supply of information	25
Publications	26
Secretary's tours	27
Financial	27
Research :—	
Technological Laboratory	28
Indore Institute of Plant Industry	29
Agricultural Research Grants	29
Research Students	37
Annual Report of the Director, Technological Laboratory	38

APPENDICES.

I.	Amending Notification under Cotton Transport Act, Bombay	53
II.	Chhota Udepur Cotton Improvement Act	53
III.	Madras Notification under Cotton Transport Act	60
IV.	Varieties of cotton grown in Madras	62
V.	Amendments to By-laws of the East India Cotton Association	64
VI.	Draft Bombay Rules regarding weights and scales under the Cotton Ginning and Pressing Factories Act	64
VII.	The damage caused to cotton by watering—Pamphlet	68
VIII.	Improvement of primary cotton marketing—Pamphlet	69
IX.	Bombay Cotton Markets Bill	80
X.	Progress in the introduction of improved varieties of cotton in various provinces	85
XI.	Report of the Director, Institute of Plant Industry, Indore, and programme of future work	91
XII.	Statement of accounts and Balance Sheet as at March 31st, 1927	105
XIII.	Statement showing expenditure under Research Schemes up to March 31st, 1927	107
XIV.	List of scientific and technical officers paid from the Indian Central Cotton Committee's Research grants	108
XV.	List of Research students	114

Annual Report of the Indian Central Cotton Committee, Bombay, for the Year Ending August 31st, 1927.

THE Central Cotton Committee was constituted by Resolution No. 404-22, dated the 31st of March, 1921, of the Government of India in the Department of Revenue and Agriculture and was originally an Advisory Committee. With the passing of the Cotton Cess Act the Committee was permanently incorporated and provided with funds of its own for the promotion of research for the improvement of cotton growing and marketing. The Committee advises the Government of India and Local Governments on matters connected with the improvement of cotton growing and cotton marketing and not only deals with such references as are made to it, but continues to take the initiative in bringing to the notice of Government matters which require attention.

In the administration of the cotton cess funds the Committee provides for research for the benefit of cotton growing in India as a whole, and this aspect of its work is steadily becoming more important. Apart from its more formal activities the value of the Committee as a common meeting-ground for all sections of the cotton industry is annually becoming more apparent.

PERSONNEL.

2. Under Rule 3 of the Indian Cotton Cess Rules, members of the Committee hold office for three years and one-third of the members retire each year in rotation. The membership for 1927 was as follows :—

(1) PRESIDENT—Dr. D. Clouston, C.I.E., Agricultural Adviser to the Government of India, *ex-officio*.

(2) REPRESENTATIVES OF AGRICULTURAL DEPARTMENTS.

Madras ..	.. Mr. R. D. Anstead, C.I.E., Director of Agriculture.
Bombay ..	.. Dr. H. H. Mann, Director of Agriculture.
United Provinces	.. Mr. G. Clarke, C.I.E., Director of Agriculture.
	(Dr. A. E. Parr, from 16th June 1926 to 4th January 1927).
Punjab ..	.. Mr. D. Milne, C.I.E., Director of Agriculture.
	(Mr. H. R. Stewart, Officiating Director of Agriculture, from May 1927.)
Central Provinces	.. Mr. F. J. Plymen, Director of Agriculture.
Burma ..	.. Mr. H. F. Robertson, Deputy Director of Agriculture;

(3) THE DIRECTOR-GENERAL OF COMMERCIAL INTELLIGENCE AND STATISTICS, *ex-officio*. Dr. D. B. Meek, O.B.E.

(4) REPRESENTATIVES OF CHAMBERS OF COMMERCE AND ASSOCIATIONS.

The East India Cotton Association	Mr. W. Ellis Jones, M.L.C. (*Vice-President*).
The Bombay Mill-owners' Association..	Mr. S. D. Saklatvala.
The Bombay Chamber of Commerce ..	Sir J. A. Kay, Kt., M.L.C. (Mr. C. H. Goodall from April 1927).
The Indian Merchants' Chamber, Bombay ..	Sir Purshotamdas Thakurdas, Kt., C.I.E., M.B.E., M.L.A.
Karachi Chamber of Commerce	Mr. G. C. R. Coleridge.
Ahmedabad Mill-owners' Association..	Seth Kasturbhai Lalbhai.
Tuticorin Chamber of Commerce	Mr. G. Z. Meli.
Upper India Chamber of Commerce ..	Mr. H. A. Wilkinson.
The Empire Cotton Growing Corporation.	Mr. W. Roberts.

(5) and (6) COMMERCIAL REPRESENTATIVES NOMINATED BY LOCAL GOVERNMENTS.

Central Provinces ..	Sir Sorabji B. Mehta, Kt., C.I.E. Rai Bahadur K. J. Deshmukh, M.L.C.
Madras	Mr. H. F. P. Hearson.
Punjab	Rai Bahadur Seth Prabhu Dayal, M.B.E.
Bengal	Mr. B. K. Lahiri.

(7) CO-OPERATIVE REPRESENTATIVE.
Rao Saheb V. Krishna Menon.

(8) REPRESENTATIVES OF COTTON GROWERS.

Madras	M.R.Ry. R. Appaswamy Naidu Garu. M.R.Ry. B. P. Sesha Reddi Garu.
Bombay	Rao Bahadur Bhimbhai Ranchodji Naik, M.L.C. (Surat). Mr. Bakshi Darshan Singh (Sind).
United Provinces ..	Kunwar Bikram Sinha of Pisawah, M.L.C. Rai Saheb M. Amba Prasad, M.L.C.
Punjab	Capt. L. H. G. Conville. Sardar Ujjal Singh, M.A.
Central Provinces and Berar.	Rao Bahadur M. G. Deshpande. Mr. M. P. Kolhe, M.L.C.

(9) and (10) REPRESENTATIVES OF INDIAN STATES.

Hyderabad State ...	Mr. B. A. Collins, C.I.E., I.C.S., Director-General of Commerce and Industry.
Baroda State	Mr. Manilal B. Nanavati, Director of Commerce and Industries.
Gwalior State	Mr. Hiralal H. Pandya, Administrative Officer, Department of Agriculture.
Rajputana and Central India States	Mr. A. Howard, C.I.E., Director of the Institute of Plant Industry, Indore.

(11) ADDITIONAL MEMBERS NOMINATED BY THE GOVERNOR-GENERAL IN COUNCIL.

1. Mr. G. H. Krumbiegel, Representative of the Mysore State.
2. Mr. C. R. Palairet, Member for Industries, Holkar Durbar, Representative of the Holkar State.
3. Mr. G. R. Hilson, Cotton Specialist, Madras.
4. Dr. W. Youngman, Economic Botanist for Cotton, Central Provinces.
5. Rao Saheb Bhimbhai M. Desai, Deputy Director of Agriculture, Gujerat, Surat.
6. Lala Niranjan Prasad, Representative of the Karachi Indian Merchants' Association, Karachi.
7. *Temporary Additional Member.*
   Mr. W. J. Jenkins, Officiating Director, Indore Institute of Plant Industry, from July 1927.

Secretary (appointed by the Government of India) : Mr. B. C. Burt, B.Sc., M.B.E., I.A.S.

Deputy Secretary : Mr. W. J. Jenkins, M.A., B.Sc., I.A.S.

Officiating Deputy Secretary : Mr. J. H. Ritchie, M.A., B.Sc., I.A.S., from May 1927.

3. It will be seen that several changes in membership took place during the year.

Sir Joseph A. Kay, Vice-President of the Committee for two years and a member of the Committee since its first meeting in 1921, retired from office in March 1927, his place as representative of the Bombay Chamber of Commerce being taken by Mr. C. H. Goodall. At their 14th meeting the Committee placed on record their keen appreciation of Sir Joseph Kay's services to the Committee as representative of the Bombay Millowners' Association during the early stages of the Committee's work and subsequently as Vice-President during an important period of development.

Mr. W. Ellis Jones, M.L.C., who has represented the East India Cotton Association on the Committee since 1922, was elected Vice-President for the year 1927-28.

At their July meeting the Committee also recorded their appreciation of the work of the retiring Co-operative representative, Mr. B. F. Madon, who had been so intimately connected with the Committee's work on the finance of the cotton crop.

SUB-COMMITTEES.

4. The following members were appointed to form the *Standing Finance Sub-Committee* required by the Indian Cotton Cess Rules :—

Mr. W. Ellis Jones (*Vice-President*).
Sir Joseph A. Kay, (Mr. C. H. Goodall from April 1927).
Sir Purshotamdas Thakurdas.
Mr. S. D. Saklatvala.
Mr. G. C. R. Coleridge.
Mr. G. Z. Meli.
Dr. H. H. Mann.
Rao Bahadur Bhimbhai Ranchodji Naik.

The Standing Finance Sub-Committee held twelve meetings during the year.

5. *The Local Sub-Committee* during the year consisted of the following members :—

Mr. W. Ellis Jones, (*Vice-President*), Sir Joseph A. Kay, (Mr. C. H. Goodall from April 1927), Sir Purshotamdas Thakurdas, Mr. S. D. Saklatvala, Mr. G. C. R. Coleridge, Mr. G. Z. Meli, Dr. H. H. Mann, Rao Bahadur Bhimbhai Ranchodji Naik, Mr. Manilal B. Nanavati, and Seth Kasturbhai Lalbhai.

The object of this Sub-Committee, which includes all members of the Central Cotton Committee living in or near Bombay, is to deal with matters of general importance in the interim between meetings of the full Committee ; to the meetings all members of the Central Committee who may be visiting Bombay are invited. This Sub-Committee has again performed most valuable work not only in dealing with various references from Government which required prompt attention but in the detailed examination of many matters dealt with by the Central Committee to which the Local Sub-Committee reports. The appointment of a Special Sub-Committee to deal with matters arising out of the Cotton Ginning and Pressing Factories Act has relieved the Local Sub-Committee of a certain amount of work; nevertheless, it has been fully occupied with the details of the various matters of importance which have come before the Committee. This Sub-Committee held eleven meetings during the year.

6. *Cotton Ginning and Pressing Factories Sub-Committee.*—The Sub-Committee was first appointed on July 6th, 1925, for the purposes of Section 2 (*f*) of the Cotton Ginning and Pressing Factories Act. The membership for 1927 is as follows :—

(1) The Vice-President, Chairman (*ex-officio*), Mr. W. Ellis Jones.

(2) Five members representing the cotton trade who are residents of the Bombay Presidency :—

Sir Joseph A. Kay (Mr. C. H. Goodall from April 1927), Mr. S. D. Saklatvala, Sir Purshotamdas Thakurdas, Mr. G. Z. Meli and Mr. G. C. R. Coleridge.

(3) Four up-country members :—

Madras .. .. Mr. H. F. P. Hearson.
United Provinces .. Mr. H. A. Wilkinson.
Punjab .. .. Rai Bahadur Seth Prabhu Dayal.
Central Provinces and Berar .. .. Sir Sorabji B. Mehta.

(4) The Co-operative Representative—Rao Sahib V. Krishna Menon.

The Sub-Committee dealt with a number of questions in regard to the working of the Act to which reference is made in a later section of the report ; seven meetings of the Sub-Committee were held during the year.

7. *Special Standing Sub-Committee on the Finance of the Cotton Crop Up-country.*—The members of this Sub-Committee during the year were :—

Sir Joseph A. Kay (*Vice-President* and *Chairman* until March 31st), Mr W. Ellis Jones (*Vice-President* and *Chairman* from April 1st), Dr. H. H. Mann and Mr. B. F. Madon.

This Sub-Committee held three meetings during the 12 months ending August 31st, 1927, examined the reports on the Khandesh, Berar and Upper Gujerat investigations and reported on these to the Central Committee. They also prepared the detailed schemes and revised questionnaires for the Punjab, Madras, Middle Gujerat, Sind and (second) Khandesh investigations which are being carried out during the cotton season 1927-28.

8. *Agricultural Research Sub-Committee.*—This Sub-Committee meets in conjunction with meetings of the full Committee and examines research proposals, the progress reports on research schemes and the reports of research students. The Sub-Committee appointed in January 1927 consisted of the following members :—

Dr. D. Clouston, (*President*), Mr. W. Ellis Jones (*Vice-President*), Sir Joseph A. Kay, Mr. A. Howard (Director of the Institute of Plant Industry, Indore), Rao Sahib V. Krishna Menon (Co-operative Representative), Mr. S. D. Saklatvala (Cotton Trade Representative), Mr. W. Roberts (Cotton Growers' Representative), Dr. H. H. Mann, Mr. D. Milne, Dr. W. Youngman and Mr. R. D. Anstead (Representatives of Agricultural Departments), Mr. G. R. Hilson and Mr. Trevor Trought (Co-opted members), and the Secretary.

Several members being absent from India on leave, the following members were appointed at the July meeting :—

Mr. W. J. Jenkins (during Mr. Howard's absence).
Mr. H. R. Stewart (during Mr. Milne's absence).

9. *Technological Research Sub-Committee.*—This Sub-Committee meets in connection with meetings of the Central Committee, and also at other times when necessary, to discuss matters arising out of the Committee's arrangements for technological research and to advise the Central Cotton Committee and the Director of the Laboratory on the management and development of the Committee's Technological Research Laboratory. The Sub-Committee appointed in January 1927, consisted of :—

The Vice-President, Mr. W. Ellis Jones, Chairman (*ex-officio*); Sir Joseph A. Kay, Mr. S. D. Saklatvala, Sir Sorabji B. Mehta, Seth Kasturbhai Lalbhai, Sir Purshotamdas Thakurdas, Dr. H. H. Mann, Mr. A. Howard, Mr. D. Milne, the Secretary and the Director, Technological Research Laboratory.

To fill leave vacancies the following members were appointed in July 1927:—

Mr. G. R. Hilson, Mr. W. J. Jenkins (during Mr. A. Howard's absence).

10. *Selection Sub-Committees,* as required by the Indian Cotton Cess Rules, were appointed from time to time to deal with appointments on the staff of the Committee.

The *Research Students' Selection Sub-Committee* met as usual in January 1927.

11. As is only natural for a body of 43 members, much of the detailed work of the Committee was carried out through the medium of the Sub-Committees referred to above. To the gentlemen who served on these Sub-Committees and, in particular, to those members of the commercial community in Bombay, who again have given so freely of their time to the furtherance of the Committee's work, much of the success which has attended the Committee's labours is due.

MEETINGS.

12. As usual the Central Cotton Committee met twice during the year, viz., on January 24th to 26th and July 16th to 19th ; the summary of the proceedings which follows will indicate the steadily growing mass of important work with which the Committee deals. At the January meeting Messrs. F. W. Hodgkinson of the British Cotton Growing Association and F. Noyce, C.S.I., C.B.E., I.C.S., President of the Cotton Tariff Board (Cotton Textile Industry Inquiry), both members of the touring Indian Cotton Committee of 1917-18, were present as visitors, and representatives of five maritime Kathiawar States, viz., Cutch, Bhavnagar, Junagadh, Navanagar, and Porbandar, attended by special invitation of the Government of India to discuss with the Committee various matters connected with the importation of cotton-seed at Kathiawar ports.

Mr. T. B. Fletcher, Imperial Entomologist, kindly attended both meetings to assist the Committee in the discussion of matters connected with the restrictions placed on the importation of American cotton to prevent the introduction of the Mexican boll-weevil.

The Karachi Indian Merchants' Association were granted representation on the Committee from July 1927; their representative, Lala Niranjan Prasad, attended in January as a visitor by special invitation.

STAFF.

13. Mr. Burt returned from leave on November 15th, 1926, and resumed charge of the office of Secretary.

Mr. Turner resumed charge of his duties as Director, Technological Research Laboratory, on return from leave on October 26th, 1926, relieving Mr. W. G. P. Wall whose services were kindly lent to the Committee by the Government of the United Provinces.

Mr. Trevor Trought, Cotton Research Botanist, Punjab, held charge of his post throughout the year.

Mr. W. J. Jenkins was appointed to officiate as Director of the Indore Institute of Plant Industry from May 5th to November 19th, 1927, during Mr. Howard's absence on leave.

Mr. J. H. Ritchie, I.A.S. (Deputy Director of Agriculture, Central Provinces), was appointed to officiate as Deputy Secretary from the 9th of June 1927.

Mr. Richardson, Spinning Master, Technological Laboratory, held charge of his post until June 6th when he proceeded on 3 months' leave, Mr. A. D. Walwyn (whose services were kindly lent by Messrs. Brady & Co.) acting as Spinning Master during his absence.

Messrs. Sen, Dutt and Hari Rao, Research Assistants, Technological Laboratory, held charge of their respective offices throughout the year save for short periods of leave.

Mr. Ram Saran Koshal, M. Sc., previously one of the Committee's Research Students, was appointed to the post of Research Assistant (Junior Physicist) from July 1st, 1927, *vice* Mr. Bathija resigned.

Mr. Amar Nath Gulati was appointed to a new post of Research Assistant at the Technological Laboratory (Junior Microscopist) from July 14th, 1927.

Mr. H. D. Nangpal, previously a Research Student in Entomology, was appointed to the post of Assistant Entomologist and his services placed at the disposal of the United Provinces Government for employment in connection with the Pink Bollworm Research Scheme at Cawnpore.

Mr. D. F. Kapadia, B.Sc. (Tech.), Manchester, previously a Research Student under the Committee, was selected for the post of Assistant Technologist at the Technological Laboratory.

Further details of the staff of the Technological Laboratory will be found in the Director's report, (page 48).

PROVINCIAL AND LOCAL COTTON COMMITTEES.

14. Provincial Cotton Committees met as follows during the 12 months ending August 31st, 1927 :—

Madras	Twice (one being a general conference).
Punjab	Once.
Central Provinces and Berar.	Once.

A Gwalior State Cotton Committee was constituted in March 1926 and has held three meetings since its inception. This Committee has undertaken the examination of several questions connected with cotton development in the Gwalior State and has a most useful field of work open to it.

15. In Bengal a Sub-Committee of the Provincial Board of Agriculture deals with cotton matters. In Bombay no Provincial Cotton Committee has yet been appointed and several matters which normally would be dealt with by such a Committee were referred by the Government of Bombay to the Central Cotton Committee and dealt with mainly by the Local Sub-Committee. Other local cotton matters are dealt with by the Divisional Cotton Committees appointed by the Government of Bombay.

16. In Madras, Local Cotton Committees exist for the following areas :— Nandyal, Bellary, Guntur, Tuticorin and Tiruppur.

17. Meetings of Provincial and Local Cotton Committees are held at irregular intervals according to the number of references before them for consideration. In several provinces Provincial Boards of Agriculture are in existence which deal with certain questions which would otherwise fall within the purview of Provincial Cotton Committees. Except in Madras insufficient advantage would seem to have been taken of the opportunities which Provincial Cotton Committees offer for joint discussion between commercial and agricultural representatives of the many questions of common interest. A further common fault in the organization of Provincial Committees is that it still frequently happens that provincial representatives on the Indian Central Cotton Committee are not always members of the Provincial Cotton Committee and hence the members of the latter are far too dependent on the Central Cotton Committee's publications for their knowledge of the work which is being done for cotton improvement even in their own Province.

CHAPTER II

THE WORK OF THE YEAR.

18. One of the most striking features of the year's work is the development of research work financed by the Committee ; this is referred to in more detail in the two succeeding chapters. Other features have been increased attention to the improvement of cotton marketing and to the discouraging of abuses. The Committee has also given considerable attention to the prevention of the introduction of foreign insect pests and diseases of cotton, and details connected with the enforcement of the restrictions on the importation of American cotton have occupied a considerable portion of the time of the Committee and of its staff. Work in connection with the Cotton Transport Act, the Cotton Ginning and Pressing Factories Act and the improvement of cotton statistics is referred to below, as also the steps which the Committee has taken to promote the improvement of cotton marketing.

19. The year under report has been abnormal in many respects. The record American cotton crop of 1926, which amounted to 17,977,374 bales of 500 lbs. each excluding linters, caused a rapid fall in prices which was the more marked in that estimates of the crop rose rapidly as the season progressed. The area of cotton sown in India in the season 1926-27 was 24,976,000 acres as compared to 28,491,000 acres in the previous year and the estimated outturn at the time of the supplementary (April) cotton forecast was 4,973,000 bales as compared to 6,250,000 bales, the revised figure for the preceding year, but the returns of cotton pressed up to the end of August 1927 indicate that the crop was under-estimated. Nevertheless, the yield was definitely unsatisfactory in certain important areas, particularly in the Punjab where the production of Punjab-American was estimated to be only 221,000 bales as compared to 359,000 bales in the previous year ; in addition to the diminished yield the quality was unsatisfactory. Exports for the 12 months ending August 31st, 1927, amounted to 2,830,000 bales only as compared to 3,775,000 bales in the previous year and, as might be expected in view of the large American crop, exports were mainly confined to short-staple cotton. Until very recently Indian prices were well above American parity so that in consequence there was a tendency for the margin between the prices of Indian short-staple cotton and Indian long-staple cotton in Bombay to narrow. Another feature of the situation was the importation of large quantities of low-grade American cotton for use in Indian mills ; such cotton was relatively cheap and the total imports for the season amounted to 324,585 bales. In December and January it was feared by some that these imports of American cotton would depress the prices of Indian staple cotton unduly and thus tend to discourage the growing of superior cottons and the Committee was asked to consider whether steps should be taken to assist growers of Indian staple cottons to hold up their produce for more favourable prices. Against any such action it was urged that the prices of all Indian cottons were still above Liverpool and New York parity. Such

parity is usually expressed with reference to the prices at which Indian cottons can profitably be exported but when the competition of imported cotton with Indian cotton is considered, it has to be borne in mind that, as the cost of export and import represents about $\frac{1}{2}d.$ per pound in each direction, the Indian mill demand for staple cottons (which exceeds one million bales annually) is a most important protection to the Indian grower of such cottons. The Committee's conclusion was that so long as Indian cotton remained above American parity any attempt to interfere with the ordinary laws of supply and demand would be of a highly speculative nature and likely to do more harm than good. In coming to this conclusion the Committee were guided by the fact that the stocks of Indian staple cottons in Bombay were small and that such forward sales of Indian staple cottons, e.g., Surats, as had been made up to that time had been effected at satisfactory premiums: hence it was felt that too much stress should not be laid on the narrowing of the margins between the Broach and Oomras Hedge Contract prices. That this conclusion was a correct one is indicated by the fact that the premium for the best Surat cotton in March and April was some Rs. 70 per candy over Broach which was the same premium as in the previous year despite the general fall in prices. The situation was further eased by a steady recovery of American prices. Finally it is of interest to note the comparative figures for the ascertained stocks in Bombay on August 31st of unsold cotton of various growths shown in the following table which has been compiled from the East India Cotton Association's returns:—

Descriptions.	31st August, 1927.	31st August, 1926.	31st August, 1925.	31st August, 1924.	31st August, 1923.
Broach	15,463	11,493	16,852	17,463	41,158
Dholleras	33,698	30,704	20,097	22,298	106,640
Oomra	41,905⅔	62,378	54,055	73,049	72,995
Khandesh	4,795	15,292	12,464	16,846	15,338
Bengals	12,720	24,193	14,397	19,069	16,952
Punjab/American	3,762	11,188	4,542	17,311	19,652
Dharwar	4,085	4,883	6,850	2,795	6,686
Comptas, Tinnevellys and Cambodia	27,218	20,486	29,176	19,405	36,765
Westerns and Northerns ..	22,628	18,158	26,007	12,319	28,883
Persian	200	563	1,476	49	390
Americans	1,920	460	..	575	140
Egyptians	5	7	..	..	21,817
East Africans	6,659	10,549	4,787	7,434	
Other sorts	6,520	13,326	11,134	24,954	
Total ..	181,578	223,680	201,837	233,567	367,416

It will be seen that there has been little if any accumulation of stocks of Indian staple cotton and that the imports of American cotton have done little or nothing more than replace the actual shortage of certain types of Indian cotton. That India should be considerably affected by the fall in price of American cotton was inevitable; this has doubtless had its effect on the area sown in the season 1927-28.

THE COTTON TRANSPORT ACT.

20. *BOMBAY.*—This Act was in force in the Bombay Presidency throughout the year.

In Gujerat three protected areas were maintained, viz.:—

The South Surat zone, the Surat zone and the Olpad-Ankleshwar zone.

In the Southern Division also three protected areas were maintained, viz.:—

The Kumpta-Dharwar zone, the Bijapur zone, and the Bagalkot zone.

In this Presidency the restrictions apply to the transport of cotton (kapas and seed) by road as well as by rail. The enforcement of the restrictions on transport by road between the three comparatively small Surat zones has always presented some difficulty, but these restrictions were necessary so long as a definite area of inferior cotton existed in the Olpad taluka. The replacement of short-stapled varieties by the improved variety 1027 A.L.F. having made considerable progress—and the active co-operation of the Co-operative Societies in the tract between the Tapti and Nerbada in this policy having been promised—the Government of Bombay withdrew the restrictions on the transport of cotton by road between the South Surat, Surat and Olpad-Ankleshwar zones on *August 10th, 1926, the first crop to be affected by the changed condition being that to be harvested in March-April 1927. It has been made a condition of the concession that the amending notification will be cancelled if inferior cotton is found to be grown in any of the protected areas. The restrictions on the transport of cotton by rail between the three zones have been maintained.

Unfortunately it appears that the organised distribution by Co-operative Societies of impure seed of the inferior Surat I.A. variety continued during the sowing season 1926 and that as there still remains a considerable area of inferior cotton in the neighbourhood of Sonsek the expected progress in establishing a single improved variety up to the Nerbudda has not been realised and the question of re-imposing the original restrictions will have to be considered. The Central Cotton Committee has advised on a proposal to apply the Cotton Transport Act to the protection of the Broach cotton area and has recommended a single large protected area from the River Nerbudda to the River Mahi and that restrictions be placed on the transport of cotton, kapas and seed by rail only.

21. In the Southern Division of the Presidency three protected areas are maintained, *viz.*, Bagalkot area, the Bijapur area and the Kumpta-Dharwar area. The following stations were added to those scheduled in the last named area by notification No. 535-A (Revenue Department), dated the 8th of August, 1927 :—

" All stations on the Alnavar-Dandeli Branch."

* For amending notification *see* Appendix I.

It will be remembered that prior to the introduction of the Act short staple Khandesh cotton, cotton fly from Bombay and Persian cotton *via.* Goa were freely imported into this area for purposes of mixing, Hubli in particular having acquired a most undesirable reputation as a mixing centre. These gross forms of adulteration have undoubtedly been stopped and the price and reputation of Kumpta and Dharwar Upland cottons have been enhanced accordingly. Complaints of mixing continue to be received and as they have been enquired into in some detail may be referred to briefly. It was stated that mill fly was again being mixed with Dharwar-American cotton in this area, but no evidence that any fly had been imported was forthcoming and it appeared probable that the complaint had been exaggerated. Relatively small quantities of fly had been sold locally by mills situated within the area which may have been used for mixing. Assurances have now been received that all the fly produced in these mills will be used for waste spinning and not sold locally. Complaints have also been received of the mixing of superior and inferior qualities of Kumpta cotton and of Dharwar-American (Upland) with Kumpta and it should be said at once that the Cotton Transport Act cannot be used to prevent the mixing of two varieties of cotton grown in the same area. The mixing of Dharwar Upland with Kumpta is an exceedingly short-sighted policy; both are staple cottons which if marketed unmixed command good prices, the actual prices depending on the seasonal demand. In all qualities except length of staple the two cottons are markedly different. The areas in which the two cottons are grown are fairly definite and the existence of the two types is due to climatic reasons but unfortunately it does not seem practicable to define separate Upland and Kumpta areas for notification under the Act. The question of the prevention by other methods of the type of mixing is at present under the consideration of the Committee.

The general administration of the Act in this area has received the very careful attention of the Committee and of the Bombay Agricultural Department during the year under report. Check stations have been established at several points to stop the introduction of kapas and cotton from outside the protected area where experience has shown them to be necessary. As in previous years licenses have been granted for the admission of large quantities of kapas from the adjoining portions of the Nizam's Dominions as the area served by the Gadag market (and which grows Dharwar-American cotton) extends considerably beyond the provincial boundary. The arrivals have been carefully examined at the market to ensure that the licenses are not abused.

The Agricultural Department has also developed and extended its organisation for the supply of pure seed of the two improved strains Gadag No. 1 (Upland) and Dharwar No. 1 (Kumpta) which are now well established in this tract.

22. *BARODA.*—The Gaekwar's Government have continued to enforce a Cotton Transport Law similar to the Cotton Transport Act and to maintain three protected areas corresponding with the Bombay zones with

which they are interlaced. Their co-operation in this respect and in the establishment of the same improved variety of cotton, viz., Surat 1027 has done much to make the working of the Act in Gujerat successful and to protect their own Navsari cotton which is the best type of Surat.

23. *RAJPIPLA.*—The Rajpipla State also maintained in force a State law on the same lines as the India Act, the whole State being constituted as one area since it now grows one improved variety of cotton. The history of Rajpipla cotton provides an excellent example of what can be done by the exclusion of inferior cotton coupled with the systematic introduction of superior seed. Some years ago, the cotton of this State was almost a drug on the market. Since then the Surat 1027 variety has been steadily introduced and in this way, with the assistance of the Cotton Transport Act and of State control of the ginning factories, the standard of Rajpipla cotton has been raised to equal that of the best Surat. On the recommendation of the Indian Central Cotton Committee the East India Cotton Association introduced special standards for Rajpipla cotton in Bombay from June 1st, 1925.

24. *CHHOTA UDEPUR STATE.*—Similar action has been taken by the Darbar of the Chhota Udepur State which is situated on the North-east of the Rajpipla, Baroda and Bombay protected areas. By a Cotton Improvement Act* which came into force on August 15th, 1927, the importation of cotton from outside (save under license) has been prohibited and the variety Surat 1027 has been adopted for cultivation throughout the State. State control of cotton ginning and pressing factories has also been introduced. There is every reason to believe that similar success to that obtained by the Rajpipla State will be achieved.

25. *MADRAS.*—The Cotton Transport Act was put into force in the Madras Presidency by notification No. 344 of the 18th of November 1925, approved by resolution of the Madras Legislative Council on August 26th, 1925; a copy of the notification will be found in Appendix III.

In the Northerns and Westerns area the notification appears to have worked smoothly and to have achieved the desired object. Certain difficulties, however, have arisen over the administration of the Act in the South. The inclusion of the Dindigul area in the Coimbatore protected area under the original notification and its separation from Virudupatti in the Tinnevelly area was the subject of much criticism by the local cotton trade. On the other hand the need of protecting the Salems area which grows mainly Cambodia cotton, much of which, however, is dry Cambodia as distinct from the irrigated Cambodia of the Coimbatore District, from the introduction of inferior cottons from outside the province had become increasingly obvious. Having due regard to the existence of natural boundaries, the varieties of cotton grown (see Appendix IV) and market and ginning

* Appendix II.

and pressing facilities the Agricultural Department finally proposed the formation of three distinct protected areas, viz. :—

(1) The Coimbatore area consisting of the Coimbatore District plus the taluqs of Karur (Trichinopoly District) and Palni (Madura District). This would be essentially an irrigated Cambodia area with Karunganni as an unirrigated cotton.

(2) A Salem-Dindigul area which would include the Salem District, that portion of the Madura District north of the river Vaigai, the Trichinopoly District, the North Arcot District and also the districts of Chittoor, Chingleput, South Arcot, Ramnad and Tanjore. This again would be mainly a Cambodia area as, of the total cotton cultivation of some 220,000 acres, 180,000 acres is Cambodia but mainly unirrigated.

(3) The Tinnevelly area as at present growing 740,000 acres of cotton of which 680,000 is Tinnevelly (some 300,000 being Karunganni) and 60,000 acres is Cambodia.

The Provincial Cotton Committee recommended that these three zones should be combined and that one protected area only should be constituted for the Tamil Districts. These proposals are at present under the consideration of the Madras Government.

Without entering into a discussion of a somewhat controversial matter it may be observed that there is general agreement that the Cotton Transport Act should be kept in force. Whilst the Agricultural Department consider that, without being unworkably small, the protected areas should be such as would be of definite assistance to the Agricultural Department in their effort to build up compact areas each growing a single type of improved cotton, the local cotton trade appear to consider it sufficient to keep out the worst rubbish which previously came from outside the Province. The Provincial Cotton Committee's proposals would at least enable inferior cottons from the Mysore and Hyderabad States, from the Central Provinces and from the Cocanadas tract to be kept out of both protected areas.

26. *CENTRAL PROVINCES.*—The Indian Central Cotton Committee has recently advised the constitution of a single protected area consisting of the civil districts of Buldana, Akola, Amraoti, Yeotmal, Chanda, Wardha, Nagpur, Chhindwara, Seoni and Bhandara, instead of two distinct Central Provinces and Berar areas as recommended in **1923.** Though the Wardha river forms a natural boundary between Berar and the adjoining Central Provinces districts, it does not form a satisfactory division so far as the present trade classification into Oomras, C.P. 1 and C.P. 2 is concerned, or from the point of view of the quality of the cotton grown at present. It therefore appears wiser to limit the application of the Act to the exclusion of inferior Khandesh and Central India cottons from the combined area now proposed.

27. *INDORE.*—The attention of the Central Cotton Committee having been drawn to the considerable importation of inferior Rajputana-Bengals cottons into Central India stations which at present have a reputation for better cotton in Bombay, the Holkar and Gwalior Durbars were requested to examine the possibility of passing legislation on the lines of the Cotton Transport Act to prevent this form of mixing and to protect the reputation and purity of their superior cottons. The Holkar State promptly introduced a Cotton Transport Bill which will come before the next session of their Legislative Committee: their prompt action in this matter should do much to maintain the reputation of their Malwi cotton and to aid materially in the establishment of a purer type of this cotton which the supply of seed from the Indore Institute of Plant Industry shortly should render possible.

The Gwalior Durbar and the Gwalior Cotton Committee are examining the best means of maintaining the quality of their cottons and preventing the introduction of inferior cottons for mixing..

28. *HYDERABAD.*—The Nizam's Government have recently passed a Cotton Transport Ordinance to protect from degeneration the large areas of long-staple *Bani* cotton (Hyderabad *Gaorani* cotton—*G. indicum*) which still exist in that State. The best cotton of this type is in good demand by Indian mills, and being capable of spinning 30s counts fetches good prices. Much of the cotton is distinctly mixed and unless steps are taken to protect those areas where the cotton exists in a state of comparative purity rapid degeneration seems inevitable. For some years past large quantities of good seed have been regularly distributed but this measure alone has not had the desired effect.

By notification under the Ordinance a protected area has been declared which consists of the *Bani* cotton-growing area serving the well-known Nander and Latur markets including most of the Nander civil district and portions of the Bidar and Adilabad districts. The area has been fixed with due reference to the existence of suitable natural boundaries and to the position of markets and the nature of the communications.

In the adjoining district of Parbhani there is still a considerable amount of long-staple cotton produced but a considerable portion of the arrivals in the Parbhani market in recent years have been short-staple or mixed cotton. Hence this district has not been included in the protected area but special auction sales of long-staple cotton at Parbhani have been organised for the coming season in order to re-establish the premium for long-staple *kapas* which growers in this area used to obtain but which has recently disappeared with the loss of the reputation of the market.

THE COTTON GINNING AND PRESSING FACTORIES ACT, XII OF 1925.

29. This Act came into force in August 1925 and has now been in force for two years. Section 14 of the Act became effective for the cotton season commencing September 1926 and from that date any purchaser is

entitled to require that no bales other than those marked in accordance with the provisions of the Act, shall be supplied in fulfilment of a contract. From the same date amendments to By-laws* 53 and 66 of the East India Cotton Association have been in force which declare cotton not marked in accordance with the Act (or with the law in force for the marking of bales in any Indian State) to be 'not a fair tender' and hence to be liable to both rejection and a penalty. This by-law was enforced at a recent arbitration in Bombay where the bales though they bore the mark of the press were not marked in accordance with the Act and indeed had been marked in such a way that the marks could easily be removed. The arbitration award was upheld by the Appeal Committee and by the Board of the Association.

30. The marking of bales is now in force in the following Indian States :—

Hyderabad (the Nizam's Dominions), the Baroda State, the Holkar State (Indore), the Alwar State, Nabha, Jodhpur, Jaipur, Rajpipla, Navanagar, Cambay, Katosan, Jhalawar, Limbdi, Wankaner, Chhota Udepur, Barwani and Alipura.

Weekly cotton press returns have been established by the following States :—

Nabha, Jodhpur, Jaipur, Alipura, Rajpipla, Baroda, Hyderabad and Alwar.

It is understood that the other provisions of the Act will be put in force in Hyderabad State at an early date and the Gwalior State have a law under preparation. The co-operation of practically all other Indian States possessing cotton pressing factories has been promised, the only important exception being Mysore. It is hoped that before the end of the present cotton year the measures proposed by the various States will have come into force, that the marking of bales will be universal and the weekly press returns complete for the whole of India.

31. The rules for the marking of bales have worked smoothly and the method of marking adopted has proved practicable and generally suitable. Many pressing factories are now equipped with simple punching machines for applying the press mark to the hoops, some are still using hand punches. The East India Cotton Association, members of the Committee and a number of millowners from time to time have reported to the Committee cases of unmarked bales and incorrect marking. These have been brought to the notice of the provincial authorities concerned and warnings issued. In a few cases of repeated neglect to mark bales, prosecutions have been instituted.

One prosecution has been instituted for neglecting to comply with a requisition (under Section 3(iii) of the Act) for a certified copy of the entries in the press-register relating to certain bales.

* Appendix V.

32. A common mistake which was brought to light was the use of numerals denoting the calendar year as distinct from the cotton year as required by Rule 7 of the Indian Cotton Ginning and Pressing Factories Rules. In all provinces except Madras the cotton year runs from September 1st to August 31st and in Madras from February 1st to January 31st. Hence for example a bale pressed in press 501 Bombay Presidency in January 1927 should be marked 501 B 26 and *not* 501 B 27. The Committee issued a press communiqué and a circular to all press-owners drawing attention to this rule. Some instances were brought to notice of bales bearing on the central hoop a double press mark, owing to second-hand hoops having been used, and in one instance the two marks referred to bales pressed in the same season. In most cases it is impossible for hoops to get back into use before the end of a season but it is possible for hoops sold by a mill situated in a cotton-growing tract to be used twice in a season. As the cotton pressing season rarely exceeds six months and is frequently considerably shorter this difficulty could be got over by mills arranging not to sell second-hand hoops during the pressing season. It seems probable however that an amendment of Rule 7 of the Indian Cotton Ginning and Pressing Factories Rules prohibiting the presence of more than one mark on the hoop will be required.

33. *Paving of press-houses* (Section 9 of the Act).—At the request of the Collector of Bombay [who is the authority for the purpose of Sections 9(2) and 9(4) of the Cotton Ginning and Pressing Factories Act in the Bombay Presidency] the Committee made recommendations as to the forms of flooring that should be recognized in pressing factories, which were as follows :—(1) Dressed stone paving, (2) brick set in lime or cement, (3) a properly laid wooden floor of planks or blocks, (4) cement concrete, (5) lime concrete with cement finish. Press-owners were notified that one or other of the above approved forms should be provided within a year.

The Collector of Bombay made a further reference on the subject pointing out that many protests, particularly from Khandesh, had come in, objecting to the exclusion of *tatties* or lattice flooring which was said to be used with the object of cleaning the cotton. It was represented that it would be an unnecessary expense to require press-houses to be paved under the lattices. It was decided, after a personal discussion with the Collector, that lattice flooring should be added to the list of permitted floorings but that it must be clearly understood that the whole of the floor of the press-house must be covered with one or other of the approved floorings and that a lattice extending over part only of a *murum* or earth floor will not be permitted.

34. *Weights and scales in cotton ginning and pressing factories.*—The rules made by the various Local Governments under Section 6 of the Act vary considerably in detail but all aim at providing that only accurate scales and weights and that of only prescribed weights shall be used in such factories. The importance of the rules under this section of the Act lies in the fact that, whatever the local system of marketing, the actual weighment of *kapas* takes place mainly in the ginning factories.

The Bombay rules are now under revision and the Committee has advised on new rules which provide for the certification and testing of weights, scales and weighing apparatus and lay down standards of permissible deviation. The draft rules as recommended by the Committee will be found in Appendix VI.

35. *Effect of the Act.*—As stated in last year's report, ample evidence has been received of the need for measures to discourage malpractices in cotton ginning and pressing factories. The Act places the buyer in a better position to protect himself against unsatisfactory cotton as he has now the means of tracing such cotton to its source. But it appears probable that to deal with certain major abuses the Act will have to be supplemented by other measures. The Committee is at present examining the question with special reference to the extent to which these abuses can be checked with the help of organised cotton trade associations and also whether further legislation is necessary and if so, what form it should take.

36. *Watering of cotton during pressing.*—There is probably no malpractice which has done more to destroy the reputation of certain growths of Indian cotton than watering and this was very emphatically stated in the report of the Indian Cotton Committee of 1917-18; there is probably no practice against which Indian millowners have more frequently and more strenuously protested. For the past ten years or so complaints on this score have been less common and, though a certain amount of damping has been customary in certain districts, deliberate and fraudulent watering has been comparatively rare of late years. Unfortunately there has been a marked recrudescence of the practice during the present year. The principal complaints arose, as in previous years, from Berar and the Central Provinces though there were also complaints about cotton from other areas. The sequel was very much what would be expected. To begin with certain stations, notably Shegaon, acquired a bad reputation and buyers fought shy of such cotton, later the prejudice extended to Berar cotton generally until it was estimated that the general price of Berar cotton was reduced by some Rs. 20 to Rs. 25 per candy. The Berar crop of 1926-27 was of unusually high grade due to the absence of rain damage and black-leaf. The export demand was fairly steady but up-country prices were distinctly above Bombay parity and up-country buyers resorted to watering to cover the difference. A more short-sighted step can hardly be imagined. Up-country dealers who parted with their watered cotton early in the season doubtless made a profit of some Rs. 6 per candy by watering. Bombay holders of such cotton found it deteriorating rapidly in stock and at the end of the season cotton of this description was unsaleable in Bombay except at Rs. 5 or more per candy *off* the market quotation for Oomras whilst at the same time unwatered cotton was fetching Rs. 11 over the hedge contract price. The inevitable result was lower prices to the grower and a bad reputation in the market which will probably last beyond this year.

The Committee has published a technical bulletin describing the results of comparative spinning trials and laboratory investigations on the result

of watering on cotton and also a popular pamphlet, in English, Hindi, Marathi and Gujerati, to give prominence to the economic loss caused by this practice ; the latter publication is reproduced in Appendix VII.

37. *Mixing.*—Numerous complaints were received of the mixing of inferior with superior Kumpta cotton and of the mixing of saw-ginned Dharwar cotton with Kumpta. These have already been referred to in connection with the working of the Cotton Transport Act. Kumpta cotton is a staple cotton used almost entirely by Indian mills and but rarely exported. In normal years Dharwar-American Upland is partly exported and partly consumed locally but exports in 1927 were impossible as Bombay prices were above Liverpool and American parity. At the commencement of the season Kumpta cotton was quoted at Rs. 26 per candy above Broach but lack of confidence in its quality caused a considerable fall. On account of the general shortage of staple cotton and the fact that the price of Dharwar-American was largely governed by the price at which low-grade American could be imported, un-mixed Dharwar Upland of good quality fetched very fair prices as was evidenced by the prices paid at the Gadag Co-operative Sale Societies' auctions for the Gadag No. 1 selection. The folly of mixing these two dissimilar cottons can hardly be over-emphasised.

FINANCE OF THE COTTON CROP AND PRIMARY COTTON MARKETING.

38. The results obtained from the Khandesh, Berar and North Gujerat investigations were summarised in the report for 1926 and as that report included the final results and conclusions up to March 1927, there is at present little to add. It was decided, after the examination of the above-mentioned results, to undertake investigations in Sind, the Punjab and in Middle Gujerat and to repeat and complete the Madras investigation in the Northerns and Westerns tract. In Sind and Middle Gujerat the enquiries are being conducted by a whole-time staff on the same lines as adopted for Khandesh and Berar. In Madras, last year's attempt to obtain the necessary information through the ordinary staff of the Agricultural Department was only partly successful for although useful information concerning cultivators' borrowings was obtained, pressure of other work prevented the staff from completing the records of the sales ; hence arrangements have been made for a full-time staff in 1927. The Punjab investigation is being conducted in co-operation with the Punjab Board of Economic Enquiry ; the Central Cotton Committee's grant provides for the investigation in the Canal Colonies whilst the Board is financing a similar enquiry in the South-East Punjab. A common questionnaire and method of working have been adopted and results will be interchanged ; in this manner it will be possible to cover more ground and to secure a better set of data than would otherwise have been the case.

It was decided in July that the original Khandesh enquiry should be repeated : not that it was incomplete but because it was felt that, while certain main facts and conclusions have been arrived at, the actual details

of 1927-28 may differ considerably from those of 1925-26. The intervening period has seen a slump in cotton prices followed by a recovery whilst the original investigation was carried out after a period of distinct prosperity. Both to confirm previous conclusions as well as to ascertain the effect of such seasonal factors, and also to afford a more definite basis of comparison for the results from new areas, the repetition of either the Khandesh or Berar enquiries seemed called for; the former was selected on grounds of convenience. There are now five investigations in progress and when the results of these have been analysed it should be possible to form some conception of the problem of primary cotton marketing for India as a whole.

OPEN COTTON MARKETS.

39. As stated in last year's report, the local investigations referred to in the preceding section definitely showed that, in some areas at any rate, the great need of the cotton-grower is better market facilities. The principal results were summarised in a pamphlet on primary cotton marketing which for convenience is reproduced in Appendix VIII. Meantime distinct progress has been made in this direction.

INDORE.

40. The Holkar State established an experimental cotton market at Sanawad in the year 1925, which was controlled by a Market Committee on which growers were represented, this being the first instance of the Central Cotton Committee's recommendations on this point being given practical shape. The market has proved a distinct success and has been of value both to growers and traders. Despite the fact that on the whole indebtedness appears to be considerably heavier amongst the growers of this tract than in Khandesh and Berar, the proportion of *kapas* brought to market by growers, viz., 75 per cent., was eminently satisfactory. The Holkar Durbar have now authorised the opening of at least four similar markets in the near future.

THE BOMBAY COTTON MARKETS BILL.

41. A Bill drafted on the lines recommended by the Central Cotton Committee was introduced in the Bombay Legislative Council in July 1927 and referred to a Select Committee. The Bill was finally passed during September and, as will be seen from the text of the Bill (Appendix IX), no changes in principle have been made; such alterations as have been effected during the passage of the Bill have taken the form of wider provisions for consulting local opinion. The new Act follows the Berar Cotton and Grain Markets Law in several respects with the important difference that the Market Committees will contain adequate representation of the growers. The Central Cotton Committee recommended that the "market proper," i.e., the area in which the Market Committee should exercise jurisdiction as distinct from the market yard, should be defined in the Act itself and not by Statutory Rules as in the Berar Cotton and Grain Markets Law. In the

Bombay Cotton Markets Bill the Berar model, however, has been followed, hence it is extremely important that the rules under the Act should be so drafted that the Market Committees will have power to see that their rules regarding weighments and allowances are observed whether weighments take place in the market yard or outside.

42. The changes in the Central Provinces and Berar Market Rules foreshadowed in last year's report, have not yet been made though it is understood that a reference has been made to Market Committees. It is hoped that this question will not be further postponed as evidence of unsatisfactory procedure in certain Berar markets and of the ignoring of certain existing rules is accumulating.

MARKETING OF IMPROVED VARIETIES OF COTTON.

43. The Committee has continued, through the medium of the Technological reports on spinning trials and by pamphlets giving details of the areas and estimated production of improved cottons, to provide the cotton trade with information of the progress made in the establishment of new varieties. Certain improved cottons, notably the best Punjab-American (when grown on well-known estates), Surat 1027 and to a less extent Dharwar No. 1 and Gadag No. 1 Upland, reach Indian mills pure, and there is little doubt that the local competition for the best Cambodia cotton produces a similar result. Other cottons, however, such as Nandyal 14 (improved Northerns) and Hagari 25 (improved Westerns) though sold locally at a premium are reported to be used by merchants for raising the general standard of the local cotton and not to be sold pure. It must be emphasised that, generally speaking, the grower will not get the full premium for an improved cotton unless it reaches the consumer unmixed. Hence the Committee attach considerable importance to placing before consumers the information referred to above.

44. The supply of type bales of such cottons to three cotton exchanges, viz., the East India Cotton Association, Liverpool Cotton Association and Manchester Cotton Association, has been continued but the Punjab-American types were omitted in view of the small supply and unsatisfactory character of the 1926 crop due to an unfavourable season. These types enable merchants and spinners alike to see what cottons are available and to compare the genuine article with the private types offered to them. Every step which can be taken to secure adequate premiums to the grower assists in the extension of the new types till they entirely cover certain definite areas—an objective which both the Agricultural Departments and the cotton trade desire to see attained. It must be recognized by English and foreign users of Indian cottons that such improved cottons as Surat 1027, though produced in commercial quantities, are in good and regular demand by Indian mills. Hence, save in exceptional years, exporters are hardly likely to ship these cottons, which find a ready local market, except against specific orders. The type bales referred to above afford consumers an opportunity of placing such orders.

MEASURES TO PREVENT THE INTRODUCTION OF THE MEXICAN BOLL-WEEVIL.

45. Matters connected with the fumigation of American cotton have occupied the attention of the Committee throughout the year. As already stated, the imports for the 12 months ending August 31st, 1927, amounted to 324,585 bales which is far in excess of any previous imports on record. The capacity originally provided for was a maximum of 1,200 bales per day, and this fact was widely advertised. With the increase of arrivals it was found necessary to increase the capacity of the plant, additional Liston machines and gas-tight hatch covers were provided by Government and additional barges arranged for until, in June 1927, the daily fumigating capacity had been raised to over 3,000 bales, the highest number actually dealt with in one month being 62,062 bales in the month of May. From March onwards most of the cotton arrived in specially chartered steamers carrying some 20,000 bales each and, owing to delays in sailing and steamers failing to arrive at the advertised time, delays were inevitable. This was particularly the case in April when the uncertainty of the future of the lighterage contract arrangements made it impossible to extend the fleet of barges as rapidly as was desired. The proximate cause of the 'jam' was the non-arrival of steamers advised for early March (when the fumigation plant was actually idle on many days) until April and May. All arrears of cotton were cleared by the commencement of the monsoon but one steamer, work on which started on June 14th (only six days after her arrival), was held up a week on account of bad weather which made unloading impossible. From May it was decided in consultation with the Bombay Port Trust, to transfer fumigation operations to Prince's Dock where three large sheds and ample wharf capacity were provided by the Trustees, thus greatly facilitating both fumigation and the delivery of fumigated cotton. As with the increased fleet of barges and larger equipment the landing of cotton in quarantine was not found necessary, the monsoon extra fee was not levied either by Government or the Port Trust, only the reduced cold weather fee of Rs. 3-1 per bale being charged. The Local Sub-Committee devoted much attention to the reduction of expenses in connection with fumigation and to the improvement of the procedure. As a result of the economy arising from the handling of large quantities and from the improved fumigating routine which experience rendered possible, the Committee were able to recommend the Government of India to make a further temporary reduction of the fumigation fee on cotton fumigated between November 1st, 1926, and July 1927, and to make a refund of seven annas per bale.

46. The Committee further considered, at the commencement of the season, a representation from the Bombay Millowners' Association that the lighterage rates (which form the biggest item in the fumigation charge) were capable of substantial reduction. An analysis of the various items concerned did not indicate any large scope for reduction but in view of the size of the imports, Government were advised to terminate the existing contract as soon

as this could be done under the existing agreement and to put the contract up to open tender, the new rate to be fixed for three years. This was done and a new contract entered into from June 1st. The basic rates under the new contract were identical with those previously in force but certain modifications in the conditions which will lead to an economy in future working were secured.

It will be seen that the system of fumigating with hydrocyanic acid gas in barges, using the Liston fumigator, has proved satisfactory and elastic. It has the important advantage of keeping capital expenditure down to a minimum—a very important consideration in dealing with a fluctuating trade the future course of which it is impossible to forecast.

47. At the instance of the Bombay Millowners' Association who represented that the fumigation of American cotton would cost the Indian textile industry some ten lakhs in the current year, the Committee again examined the question as to whether it is necessary to insist on the fumigation of imported American cotton. In view of the doubts that were expressed as to the possibility of the boll-weevil reaching India alive they asked the Government of India if actual experiments could be undertaken to settle this point beyond doubt. The question was very fully examined and it was found that the danger inherent in experiments which involved the bringing of live boll-weevils to India was too great to be risked and that it was impossible to devise safeguards which would ensure that the experiments would not end in disaster. The Government of India informed the Committee that though they would have gladly seen the scientific aspect of the question fully investigated it was not possible to authorise the proposed experiments. The Committee at a later meeting considered that the latest information as to the time which the active weevils could survive without food made the experiments unnecessary. The recrudescence of serious boll-weevil damage to the American cotton crop of 1927, after a period of three years of relatively little damage, emphasises the absolute necessity of adequate measures to keep the pest out of India.

PREVENTION OF THE INTRODUCTION OF FOREIGN INSECT PESTS IN IMPORTED COTTON-SEED.

48. The Committee in January 1926 recommended to the Government of India that commercial importations of foreign cotton-seed into British India should be entirely prohibited and that in future imports should be limited to cotton-seed required for experimental purposes, when ordered by certain officers specifically empowered, and then in quantities not exceeding 1 cwt. through the Port of Bombay and subject to inspection and disinfection. It was also recommended that the co-operation of all Maritime States should be secured in this policy.

A conference with representatives of five of the Kathiawar States was held in January 1927 as a result of which it was decided, on the advice of the Imperial Entomologist, that no restriction on the imports of Persian *kapas*

for ginning at Kathiawar ports was necessary. The representatives of the States undertook to maintain their present prohibition against foreign cotton-seed but asked for facilities for the importation of East African cotton-seed in the future should necessity arise in a year of scarcity. It was decided that the cost and efficacy of heat treatment for this purpose should be investigated by the Committee since the importation of East African cotton-seed into the Porbander and Bhavnagar States in years of scarcity might be a greatt boon to Kathiawar States. In such years a large import of cotton-seed for cattle feeding is necessary and African seed can be landed at approximately half the cost of Khandesh cotton-seed.

COTTON STATISTICS.

49. *Rail-borne Trade returns for cotton.*—At the request of the Committee, the Government of India undertook to re-institute the rail-borne trade returns for cotton and from October 1926 a monthly statement of the cotton exported from each internal trade block has been compiled and published in the *Indian Trade Journal.* It has been ascertained that statistics of exports alone do not provide the data necessary for an independent estimate of cotton production, which is the object of the returns, and the Government of India have been requested to re-introduce statistics of imports into each trade block.

50. *Cotton Press returns.*—The returns of cotton pressed have been of great value in testing the accuracy of the estimates of cotton production as well as furnishing the trade with reliable information of the progress of the crop. In connection with the latter feature it may be observed that though it is impossible to publish press returns classified by trade varieties (except for Madras) an examination of the detailed returns for individual blocks (as published in the *Indian Trade Journal*) enables a very fair estimate to be formed of the progress of ginning of the more important growths.

A complete check on Indian cotton production will not be possible until all Indian States have introduced compulsory press returns. Enquiry has shown that the discrepancies between the forecast of production and the quantities of cotton pressed are due to some extent to imports of cotton from Indian States into British India for pressing and to a less extent to imports from one Province to another. Nevertheless, the returns have enabled Directors of Agriculture to locate important sources of error and to take steps for their correction. The total discrepancy for British India was 298,000 bales—the crop being under-estimated to this extent—and it is probable that the actual error was in the neighbourhood of 1½ to 2 lakhs of bales after making allowance for imports from Indian States. In Berar alone the discrepancy was 229,000 bales but it is believed that some 80,000 to 100,000 bales represent imports into the Province. The estimate of the United Provinces crop was 63,000 bales (25%) *above* the total of the press returns and consumption of loose cotton in mills: even allowing for village consumption on a scale considerably higher than the conventional figure adopted in the forecasts it is clear that the crop did not come up to expectations.

51. *Cotton Forecasts.*—The application of the cotton press returns to the testing of the estimate of cotton production has brought to light the fact that in several instances important changes in the character of the crop have become known *after* the receipt of the report on which the final (February) cotton memorandum is based and that there is no machinery at present for taking advantage of such knowledge when the supplementary all-India forecast is issued in April. The April memorandum was introduced in 1921 (on the recommendation of the Indian Cotton Committee of 1917-18) and is mainly concerned with the final figures for the Madras crop. An examination of the subject showed that there was equal need for a fifth regular forecast in the Southern and Gujerat divisions of Bombay as the crop is still immature when the reports for the February memorandum are sent in. The Committee have therefore represented to the Government of India that a fifth provincial cotton memorandum is required for the Bombay Presidency. In regard to other Provinces it has been proposed that any changes in the character of the crop which come to light after the February memorandum is compiled should be reported to the Director-General of Commercial Intelligence and Statistics in order that revised figures may be included in his April memorandum.

52. *Imports of American cotton.*—In view of the large imports of American cotton which took place in 1927 and the obvious need for dependable estimates of such imports, the Committee organised a system of voluntary advices from importers of American cotton purchased for India and since the 28th of April has published a weekly circular stating the total amount of cotton purchased for arrival during the season, the quantity arrived and the quantity at sea for India. Statistics of arrivals were compiled from the fumigation records and advices ; estimates of cotton at sea from the compulsory advices required by the notification under the Plants Diseases and Pests Act which were checked from telegraphic reports of cotton shipped from American ports. Importers' voluntary advices, the details of which were strictly confidential, proved to be very accurate on the whole and naturally facilitated the fumigation arrangements as well as the compilation of the statistical circulars referred to above.

53. *Cotton consumption.*—The Committee has continued to publish a monthly statement of the amount of *Indian* cotton consumed in Indian mills based on the returns received from mills in British India under the Cotton Cess Act and direct returns received from Indian States.

54. *Collection and supply of information.*—As in past years a note on the recent progress in the introduction of improved varieties of cotton was contributed to the *Bombay Cotton Annual* published by the East India Cotton Association. The substance of this is reproduced in Appendix X. The Committee also provides a considerable portion of the general information contained in the *Bombay Cotton Annual.* It is believed that by the Committee's co-operation with the East India Cotton Association in the production of one annual publication containing all important statistical information on cotton production and consumption such information will most easily reach those able to utilise it.

55. The Committee is again indebted to the British Cotton Industry Research Association for the supply of their weekly summary of current literature in which abstracts appear of all work published in connection with cotton growing and cotton technology and reference is made to the scientific work bearing on these subjects, and also for the supply of copies of the Shirley Institute Memoirs.

To the Empire Cotton Growing Corporation the Committee is also indebted for the supply both to the library and to members of the Committee of copies of their own proceedings, of special reports obtained by them on cotton prospects in other parts of the Empire and of the *Empire Cotton Growing Review* which is published quarterly. They have also supplied us with a considerable amount of information in regard to special cotton legislation in other countries.

The Committee has in addition a large circle of Government Departments and public bodies interested in cotton, both within and outside the Empire, with whom an exchange of publications is made.

PUBLICATIONS.

56. The following bulletins and pamphlets have been issued during the year under report :—

Report on an investigation into the finance and marketing of cultivators' cotton in Khandesh.

Report on an investigation into the finance and marketing of cultivators' cotton in North Gujerat.

Report on an investigation into the finance and marketing of cultivators' cotton in Berar.

Improvement of primary cotton marketing. (Pamphlet.)

Technological Reports on standard Indian cottons, 1923-26. (Technological Series No. 3.)

Index to publications of the Imperial Department of Agriculture in India dealing with cotton, 1906-26.

Effect of watering on cotton. (Technical pamphlet.)

The damage caused to cotton by watering. (Pamphlet in English, Hindi, Marathi and Gujerati.)

The effect of temperature and humidity on cotton spinning with particular reference to conditions in Bombay. (Technological Series No. 4.)

The effect of subjecting cotton to repeated blow-room treatment. (Technological Series No. 5.)

Publications issued by the Imperial Department of Agriculture.

Use of hydrocyanic acid gas for the fumigation of American cotton by A. James Turner and D. L. Sen. (Bulletin.)

A study of *Fusaria* common to cotton plants and cotton soils in the Central Provinces by Jiwan Singh,* M.Sc., Assistant to the Mycologist, Central Provinces. (Memoir—Botanical Series, Vol. XIV, No. 6.)

Studies on *Platyedra Gossypiella* Saunds. (Pink Boll-worm) in the Punjab by Sohan Singh Bindra,* M.Sc. (Memoir—Entomological Series.)

A cross between Indian and American cotton by Mr. B. B. Desai,* B.Ag. (Published in the *Agricultural Journal of India.*)

The system of sending to the *Agricultural Journal of India* abstracts and notes on matters of use to agricultural officers and others engaged on cotton work was continued.

SECRETARY'S TOURS.

57. Visits were paid to Madras, Coimbatore, Nagpur, Indore, Cawnpore, Lyallpur, Khanewal, Delhi, the Hyderabad State, Dharwar, Poona and Karachi in connection with the work of the Committee.

FINANCIAL.

58. The financial year of the Committee runs from April 1st to March 31st and this does not correspond with the cotton year ending August 31st with which this report deals. Expenditure during 1926-27 amounted to approximately Rs. 6,10,000 compared to Rs. 6,94,000 receipts from the cotton cess but it may be noted that cotton cess receipts for the 12 months ending August 31st, 1927, amounted to Rs. 5,90,482 only. Owing to delay in starting work on two new schemes expenditure in 1926-27 was considerably lower than was anticipated. For the current year the estimated expenditure is Rs. 8,00,000 as compared to estimated cotton cess receipts of Rs. 6,00,000. The balances accumulated during the earlier years, when the cotton cess was levied at four annas per bale and expenditure was lower, since research schemes could only gradually be developed, are now being drawn on steadily to enable additional research work to be financed. Care is taken that the Committee's permanent and semi-permanent commitments do not exceed the average annual income from the cess and investments.

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* The paper describes work done by the author whilst a Research Student under the Committee.

CHAPTER III.

RESEARCH.

59. The Committee provides for research work for the improvement of cotton growing by maintaining a Technological Research Laboratory at Bombay, by providing the bulk of the funds for the Indore Institute of Plant Industry, which is in effect a central research station for botanical and agricultural work, and by research grants to Provincial Departments of Agriculture for specific investigations.

TECHNOLOGICAL RESEARCH LABORATORY.

60. The report of the Director, Technological Laboratory, will be found in Chapter IV; as will be seen from that report considerable progress was made during the year both in the Research Laboratory and in the Spinning Laboratory and there has been a further increase in the extent to which Provincial Agricultural Departments have utilised the facilities afforded. The object of the Laboratory is to provide accurate spinning tests on Indian cottons, in order to assist in the production, introduction into cultivation and satisfactory marketing of improved types; to investigate the fibre characters of Indian cottons and to determine the relation of these characters to spinning value. As has been emphasised in the Committee's report on Cotton Research in India, the Technological Laboratory forms an integral part of the Committee's scheme of agricultural research. Though it is convenient to discuss separately the work of the Spinning Laboratory and the Research Laboratory, the two form an indivisible whole, for it is to the correlation of the results obtained in the two sections that we look for our most important results in the future. It will be seen that considerable progress has been made in the study of the cotton fibre and that for some fifty cottons which are spun annually, measurements are now made of no less than seven fibre characters. The provision of spinning tests has already added a new precision to the work of the Cotton Breeder; any increase in our knowledge of the relative importance of the different measurable characters of the fibre in determining the spinning value of a cotton would mark a very distinct further advance.

61. Of particular interest is the work carried out on what have been termed standard cottons and which are mainly those improved varieties which the Agricultural Departments have established on a considerable scale. Originally undertaken to provide the necessary basis for the testing of newer strains, the work has proved of practical value in several other directions. The results of accurate spinning trials carried out year by year are of considerable value in organising the marketing of improved cottons and are of great interest to the trade as well as to the Departments of Agriculture. The information which has been collected on seasonal variation

in quality is steadily growing in value for not only does such work provide an answer to the question as to whether any particular growth is maintaining its character or is deteriorating but it is hoped that an examination of the data which have been collected for certain climatic factors will throw some light on the causes underlying seasonal variation in quality. Whilst the tests on new cottons for Cotton Botanists provide the information they require in the course of their work and enable them to simplify the sorting of the mass of material which they have to handle, the work on standard cottons—both in the Research Laboratory and the Spinning Laboratory—is directed to the extension of our knowledge of Indian cottons generally.

62. The work of the Technological Laboratory is essentially directed to the improvement of the raw material, that is to say, the various problems dealt with are attacked from the standpoint of cotton-growing. Nevertheless a good deal of work has been necessary to determine the conditions which must be satisfied in order that spinning tests may be sufficiently accurate for our purpose ; in the course of such work in the Spinning Laboratory some extremely interesting results from the spinning and testing standpoints have been attained. Some of these results have recently been published in bulletin form and it will be seen that they have a distinct bearing on the utilisation of existing growths of Indian cottons.

THE INDORE INSTITUTE OF PLANT INDUSTRY.

63. The Annual Report of the Director will be found in Appendix XI and elsewhere in this report appear some illustrations of the Institute. It will be seen that general investigations into the botany, physiology and cytology of Indian cottons are in progress and that in addition certain problems particularly connected with cotton-growing on the black soils of Central India are receiving special attention. The work of the Institute has aroused much interest locally and two more Indian States, viz., Tonk (Rajputana) and Bijawar (Central India) have undertaken to contribute to the funds of the Institute which is financed partly by grants from the Central Cotton Committee and partly by contributions from ten Indian States. In addition to the study of the different varieties of Indian cottons the question of improved methods of cultivation has been taken up. A method has been worked out for the eradication of *Kans* (Saccharum spontaneum) which is by far the most serious weed of black cotton soils in the North Peninsular India and which has been responsible for large areas of land going out of cultivation. Much progress has also been made with the study of methods of preparing cheap organic manures for the cotton crop. Seven research students appointed by the Central Cotton Committee (two senior and five junior) were working at the Institute during the year ; one of the senior students has recently been appointed to the Bombay Provincial Agricultural Service.

AGRICULTURAL RESEARCH GRANTS.

In the previous chapter reference has been made to the Committee's expenditure on the promotion of cotton research and some further details will be found in Appendix XII. The thirteen provincial research schemes

financed by the Committee are distributed as follows:—Madras 2, Bombay* 5, United Provinces 1, Punjab 2, Central Provinces 2 and Sind 1. By subjects these schemes may be classified as follows :—Cotton-breeding investigations 5, cotton diseases 2, cotton entomology 3 and cotton physiology 3.

65. Dealing first with the cotton-breeding schemes, it will be realised that it is as yet much too soon to expect to see new cottons in cultivation. The time required for the actual research work varies with the nature of the particular problem undertaken. Each generation takes a year and when it is stated that the *third* is the earliest possible generation when a straightforward selection could be ready for multiplication and that in some cases eight generations of a hybrid may require study before a new strain can be fixed, the time necessary to secure practical results will be appreciated. It should be added that three generations are required to multiply up a selection to any appreciable field scale but extended field—testing and spinning tests can go on concurrently with this last stage. It should perhaps be emphasised that the improved cottons now in general cultivation on literally millions of acres in India, e.g., Cambodia, Surat 1027, " Company " Karunganni, Punjab-American, Gadag No. 1, Dharwar No. 1, Hagari 25, and several others which are only on the scale of a few thousand acres, are the result of work commenced many years ago in the early days of the Agricultural Department. But that work was successful and has changed the character of the Indian cotton crop and we can have equal confidence in future results if work is continued on sound lines. It should also be emphasised that, in respect to cotton-breeding particularly, the Central Cotton Committee is supplementing the work of the Provincial Agricultural Departments, many of which are doing a great deal more with their own funds than from ours. On the other hand our cotton-breeding schemes have an advantage in that, in all cases, they are a development of work that had already been commenced so that some time has been saved. It has been felt desirable to add this general explanation as the extent to which the agricultural investigator is limited by the fact that usually only one generation of a crop can be produced annually is not always fully appreciated. Hence the summaries that follow, whilst they show in what way the Committee's grants are being used, can only give the most general indication of the progress which has been achieved. But the most careful discussion of the annual reports on the various schemes by the Agricultural Research Sub-Committee shows that the work has been well planned and that it is being carried out thoroughly and skilfully.

66. *The Madras Herbaceum Scheme.*—Annual grant averaging Rs. 12,000 per annum for five years—present grant Rs. 13,000. The object of this scheme is to obtain, by the method known as pure-line selection, pedigree strains of the best components of a mixed crop. The *Herbaceum*

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* Presidency Proper—The Dharwar Scheme has been counted as two, as two separate and distinct investigations are in progress though under one senior research officer.

(or Uppam) type of Madras cottons possesses certain desirable agricultural characteristics and the varieties under study are those which thrive on soils somewhat deficient in moisture and in a tract with a distinctly light rainfall. The object is to select types with good staple and eventually to multiply for distribution the most profitable type. Similar work by Mr. Hilson some years ago produced the improved type of Westerns known as Hagari 25 which is a recognised success. Much of the spade work has now been got through and several strains have now reached the stage when field trials and spinning tests can be undertaken. A natural hybrid between *G. herbaceum* and *G. indicum* (Uppam x Karunganni) is also being studied and purified.

67. *Central Provinces and Berar Botanical Research Scheme.*—Annual grant averaging Rs. 17,200 per annum for five years—present grant Rs. 25,500 per annum. Prior to the initiation of the Committee's research scheme in 1923 Dr. Youngman had been engaged as Economic Botanist, Central Provinces and Berar, on the study of the cottons of the Province with the object of obtaining profitable cottons with a better staple and a higher resistance to the cotton wilt disease. Concurrently work had been started on methods of improving the yield per acre. As a result of the Committee's grants, a special cotton staff has been arranged and Dr. Youngman devotes his whole time to the botany of cotton and certain rotation crops. A considerable proportion of the cost of the work is met by the Central Provinces Department of Agriculture, the Committee's grant being applied to certain specified items of expenditure. The field covered is wide involving as it does a detailed study of many forms of Indian cottons and of the possibilities of producing new types by hybridisation. Reference may be made, however, to certain practical results which have already emerged. Two new types of cotton, known for the present as Verum 262 and Verum 265, have been found to possess several of the desired qualities. Spinning tests at the Technological Laboratory show that they are suitable for the production of 20s (warp) counts, the ginning percentage is reasonably high, these strains show considerable resistance to the wilt disease and the agricultural yield is satisfactory. During the present cotton season they are being grown by cultivators on a scale of 750 acres and arrangements are being made for the organised marketing of the produce in order that the true commercial value of these cottons may be demonstrated. Botanical work on Chanda Jari, a variety of *G. indicum*, has resulted in the isolation of a pure strain free from the tinge of colour which characterised the local variety.

68. *Punjab Botanical Research Scheme.*—Initial grant Rs. 29,300, recurring grant Rs. 45,000 per annum.

The Committee has provided a Cotton Research Botanist (Mr. Trevor Trought, M.A., previously Senior Botanist to the Egyptian Ministry of Agriculture) and a grant for a special staff and equipment for the study of a number of problems connected with cotton growing under Punjab Canal Colony conditions. Very substantial additional expenditure has also

been incurred by the Punjab Government and in this way a special botanical section for cotton has been established. Work is in progress both on American and *desi* cottons but, at present at any rate, attention is mainly concentrated on various problems connected with Punjab-American cotton. As the result of the earlier work of the Agricultural Department, Punjab-American cotton now covers an area of 750,000 to a million acres annually and indeed is the most outstanding example of the establishment of a large area of long-staple cotton in India. In many years the cotton is of excellent quality and the yield satisfactory but in certain years, notably 1919, 1921 and 1926, due to an unfavourable season, both yield and quality have been unsatisfactory. The question of these occasional failures and the general problem of improving the yield and quality of the crop are being studied from both the varietal and physiological standpoints and some further information has already been obtained on the causes of the low yields of 1926. Arrangements have also been made for "rogueing" the seed areas on various large estates which supply a large proportion of the American cotton seed for the Canal Colonies in order that the seed of the 4F, 285F and 289F varieties which is issued for general cultivation may be as true to type as possible.

69. *Dharwar (Bombay) Cotton Breeding Scheme on Upland Cottons.* —Annual grant* Rs. 12,550.

If we except dry Cambodia in Madras, the future of which may still be considered doubtful, the Dharwar Upland area† is the one area in British India where the American type of cotton is grown on a commercial scale *as a rain-fed crop* and is the only direct result of the introduction of American cotton about 1840. The reason why the Upland type persists around Gadag in competition with Kumpta is that it has a shorter growing season, can be sown later and so suits the climate of this tract better than Kumpta. The Agricultural Department have already succeeded in replacing the old mixture by a pure Upland strain, Gadag No. 1, which is a cotton of exceedingly useful staple. Upland cotton being firmly established in the tract it is obviously desirable to grow as good a stapled cotton as possible. The limits of ordinary selection having apparently been reached it was decided to attempt to secure further improvement by hybridisation using Sea-Island cotton as a parent—not because it is expected to obtain Sea-Island staple but because the history of American cottons suggested that this course was desirable. Work had been started by the Agricultural Department's Cotton Breeder and was taken over by the special staff paid from the Committee's grants. It is as yet too early to say more than that the results are promising. The work has now reached the fifth hybrid generation and there are grounds for believing that a cotton with a much better lint than Gadag No. 1 and with an agricultural habit suitable to the tract has been obtained.

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* Includes half the pay of the Botanist (Mr. Kulkarni) who is in charge of both this and the Cotton Wilt Scheme.

† The Dharwar-American area extends into the Hyderabad and Mysore States and is not limited to the Dharwar District of the Bombay Presidency.

70. *Khandesh.*—Annual grant Rs. 5,000 per annum for five years from 1925-26.

By their grant to this scheme the Committee has enabled an adequate staff to be provided for the completion of work that has been going on for some years. Of several selections from a hybrid, two have been obtained which combine a good ginning percentage with satisfactory lint quality. Spinning tests have been regularly conducted annually at the Technological Laboratory and show that these strains are capable of spinning 20s counts as compared to the 8s to 10s usually obtained from Khandesh cotton. One strain has been distributed tentatively to cultivators, both are now undergoing exhaustive field trials on the Government farm and on cultivators' fields. The all-important question of the relative yield per acre of these cottons has not yet been settled finally but they are exceedingly promising.

71. *Cotton Diseases.*—Grants have been made for the study of the wilt disease of cotton at Dharwar and Nagpur. This is the only generally important disease of cotton in India, and, though it had been known and worked on for a number of years, there was little definite knowledge of remedial measures when the Committee decided in 1923 to give two grants for its further investigation. It presents perhaps the most baffling and difficult problem which has been undertaken but the loss caused by this disease throughout a large portion of the black soil areas, representing a large proportion of the total Indian cotton area, is so large that further investigation seemed urgently called for.

72. *Dharwar.*—Annual grant* Rs. 12,450.

No attempt to summarise the work at Dharwar will be made here as a Memoir is under preparation. In two directions practical results have been achieved. It has long been recognised that the use of resistant strains is one practical method of reducing the loss from this disease and the Bombay Agricultural Department's Cotton Breeder has been engaged on work on *Kumpta* cotton to this end for some years. The Mycological staff have worked out methods of testing relative susceptibility and have co-operated in the testing of the Cotton Breeder's strains with the result that some new strains of good staple and high disease resistance are now available. But the use of such strains is not a final solution of the problem and work in other directions has been continued. The determination of the thermal death point of the fungus has indicated the possibility of control measures and field experiments to test this point are in progress.

73. *Central Provinces Cotton Wilt Scheme.*—Annual grant Rs. 5,800 (average). The work on this investigation is being carried out by Mr. J. F. Dastur, Mycologist to Government, Central Provinces, the Committee's grant providing for additional assistants and equipment. At Nagpur the

* Includes half the pay of the Botanist (Mr. Kulkarni) who is in charge of this and the Dharwar Cotton Breeding Scheme.

question is being investigated more from the physiological aspect and some interesting information has been obtained as to the course of the disease. There are indications also that the wilt problem in the Oomras tract differs in certain respects from that in the Kumpta cotton tract.

Cotton Entomology.

74. *The Pink Boll-worm.*—The Committee have made grants for two investigations on the Pink Boll-worm which is undoubtedly the most destructive cotton pest in India.

United Provinces.—Total capital grant Rs. 54,000, present annual grant Rs. 16,000.

The results of Mr. Richard's work at Cawnpore were summarised in the last Annual Report of the Committee : these have been fully confirmed by further work. It has definitely been shown that if the United Provinces cotton crop is protected from this pest the improvement both in yield and quality is great ; the small scale cage results have been confirmed on a field scale under cultivators' conditions. Two further years' work is required to clear up certain details but it has been practically established that if *all* the cotton-seed of a sufficiently large tract can be treated by heat the pest can be controlled. The logical development of these results is that all ginning factories in future should be equipped with heat machines for the treatment of all seed (whether intended for sowing or not). It has been shown that the improvement of yield and quality to be expected from the control of the Pink Boll-worm would add at least 25 per cent. to the value of the United Provinces cotton crop. As such control of the Pink Boll-worm would mean the practical elimination of stain from Bengals cotton, this is an advance which every member of the cotton trade and industry would appreciate. The benefit to the grower has been calculated to be anything from Rs. 30 per acre upwards when both yield and quality are taken into account. The cost of treating the cotton-seed produced per acre s not likely to exceed three annas so that even if only a portion of the anticipated profit is realised the benefit to cotton growing would be enormous.

75. *Lyallpur Research Scheme.*—Initial grant Rs. 6,000, annual grant Rs. 17,000.

An investigation carried out by one of the Committee's research Students (Sohan Singh Bindra), the results of which are now being published in a Memoir of the Imperial Department of Agriculture, has added considerably to our knowledge of the incidence of this pest in the Punjab. The Pink Boll-worm is at present definitely a serious pest in the South-Eastern Punjab, less important elsewhere and relatively unimportant in the Canal Colonies. There is, however, no certainty that it will not increase in the last area though there are indications that it may be limited by climatic factors. The object of the scheme is to ascertain what limitations actually exist and to obtain full and accurate knowledge of the status of this insect in the Punjab. The scheme is complementary to and not a repetition of the work at Cawnpore which has been referred to above.

76. *The Earias Boll-worm—Surat Investigation.*—Annual grant Rs. 15,000.

The Spotted Boll-worm is the principal pest of cotton in those parts of India unaffected by the Pink Boll-worm. The investigation at Surat has definitely shown that whilst the importance of this pest in South Gujerat may have been exaggerated in the past, it is certainly responsible for rendering the crop later than it otherwise would be. Whether, apart from this, it occasions any actual loss of crop at Surat is doubtful since, with the exceptionally long growing-season which characterises that district, the plant appears to recover. But it is not certain that this holds true in all seasons or in other parts of Gujerat and there is little doubt that the pest acts as a brake, preventing an increase of yield being attained. Various suggested control methods proved disappointing but the maintaining of a soil mulch which prevents the successful pupation of the larvae, a method which has recently been worked out, is exceedingly promising. The further knowledge of the life-history of this pest in relation to the cotton crop which has been acquired during the course of this investigation may prove of value in other parts of India where the shorter growing-season gives the plant less time to recover from damage in the early stages.

Cotton Physiology.

77. *Surat Research Scheme.*—Annual grant Rs. 25,000.

The first investigation into the physiology of the cotton plant to be financed by the Committee was the Surat Research Scheme on the causes leading to the shedding of buds, flowers and bolls of the cotton plant in Gujerat. The yields of cotton obtained in Gujerat compare favourably with yields from unirrigated cotton cultivation in any other part of India; the plant grows sturdily and well but the proportion of flower-buds that eventually form mature bolls is surprisingly small being only some 7 to 10 per cent. It appears that there is enormous scope here for the improvement of yields if the shedding could be reduced. Part of the shedding is due to the Spotted Boll-worm—especially the early shedding—but it has been proved that this is not the significant factor. The first two years' work showed that the loss of potential crop was not due to pathological reasons but was a plant nutrition problem. Work on this aspect of the problem was developed and it has been found that by various artificial means the number of matured bolls per plant can be doubled. From these results improved methods of cultivation are being worked out and this aspect of the work will receive special attention during the coming year.

78. *Madras Pempheres and Physiological Scheme.*—Annual grant Rs. 55,000 (average).

As stated in last year's report the object of this scheme is to provide for the study of a group of related problems. Work on bud, flower and boll shedding has been carried to a certain stage by the Cotton Specialist to the Madras Government in the course of other work and the results

published; this work will be continued and extended. The cotton stem weevil, *Pempheres affinis*, threatens to be a limiting factor on cotton production at Coimbatore and there is a risk of its becoming a major pest in other parts of India. The life-history has been worked out already but no direct control measures appear possible. An important line of enquiry is the resistance to attack and power of recovery shown by certain strains of cotton, and investigations from both the botanical and chemical aspect have been arranged for. Concurrently certain further entomological data will be collected with special reference to the utilisation of the Madras Pest Act against this insect. Difficulties in securing the senior staff have delayed work on this scheme but in the meantime some progress has been made with the biochemical work by one of the Committee's research students working under the joint direction of the Agricultural Chemist to the Government of Madras and the Cotton Specialist, Madras.

79. *Sind Research Scheme.*—Annual grant Rs. 20,000. Work on this scheme started on July 9th, 1927, when Mr. B.M. Dabral, previously Assistant Physiological Botanist under the Committee's Research Scheme at Surat, was posted to the Sakrand Research Station. The Bombay Government research station at Sakrand is undertaking a series of investigations into the various problems connected with the transition of the canal system from inundation to perennial irrigation and work on cotton forms an important part of the programme of the station. The Committee's grant provides for a Cotton Physiologist and staff to investigate certain problems connected with the water requirements and general physiology of the cotton plant under canal colony conditions.

80. *Punjab.*—Reference to the physiological work in progress at Lyallpur has been made in connection with the Punjab Botanical Scheme. The work in progress on the causes leading to the non-dehiscence of the anthers of the cotton flower at certain periods of the year promises to yield important practical results.

81. The Central Cotton Committee's policy in regard to Cotton Research has been to fill the gaps which exist in the work undertaken by Provincial Agricultural Departments but in doing so to avoid purely local problems and to devote their funds to investigations which have a definite bearing on Indian cotton-growing as a whole. The pursuance of this policy has led them to finance some of the more difficult and baffling problems connected with the improvement of cotton-growing and it follows that in some cases results will be slow in appearing. But the solution of these problems is necessary if some of the greatest limitations on increasing the monetary return per acre of cotton are to be modified or removed.

82. The abstract of the Committee's expenditure on Cotton Research up to March 31st, 1927, which will be found in Appendix XIII, shows the distribution of the various grants and the nature of the expenditure met from them. All purchases from the Committee's grants remain the property of the Committee and a record of all such apparatus and equipment is maintained so that as time goes on transfers of equipment from one

scheme to another may be effected when apparatus or equipment is no longer required for the investigation in connection with which it was originally purchased.

RESEARCH STUDENTS.

83. No less important than the provision of funds for Cotton Research is the devising of means for securing a corps of qualified scientific workers with experience of cotton research. It is with this end in view that the Committee introduced its scheme of Research Studentships for graduates of Indian Universities under which young men who have the necessary scientific training and a bent for research may be trained in the application of scientific methods to research on cotton under more experienced investigators working in different parts of India. From September 1923 when the first appointments were made to August 31st, 1927, expenditure on this branch of the Committee's work has amounted to Rs. 1,02,395. The value of each studentship is Rs. 150 per mensem (with a local allowance for students at the Technological Laboratory) and the normal term of appointment is two years which is frequently extended to a third year. A few senior research studentships of higher value are given from time to time. The total number of research students appointed is 34 of whom 18 are still under training, 14 not yet having completed their two-year period. Including one Senior research student, twelve students have received appointments in connection with cotton research and two others have been definitely selected for appointments which they will take up shortly; two other students have had suitable appointments offered to them but preferred to take up educational work. Three students resigned without completing their term. It will be seen that largely due to careful initial selection wastage has been small and that those students who have completed their training have formed a useful addition to the cadre* of scientific workers engaged on cotton research. Details of all students appointed to date will be found in Appendix XV.

84. The time has not yet come for a general review of the Committee's work and in any case it has recently been examined by a far more authoritative body, viz., the Royal Commission on Agriculture. But this much may be said: the Committee has achieved some important results in the improvement of cotton marketing which have led to definite benefit to the grower and they have paved the way for further advances. By their grants and their influence they have been able to secure steady progress in agricultural research, so far as work on one crop is concerned, during a period of uncertainty and financial stringency. The evidence tendered to the Royal Commission on Agriculture in various parts of India leads one to believe that the experience gained by the Committee of a somewhat unique form of organisation will not be without value when the Royal Commission's report enables a great forward move to be undertaken in agricultural development in India.

B. C. BURT.

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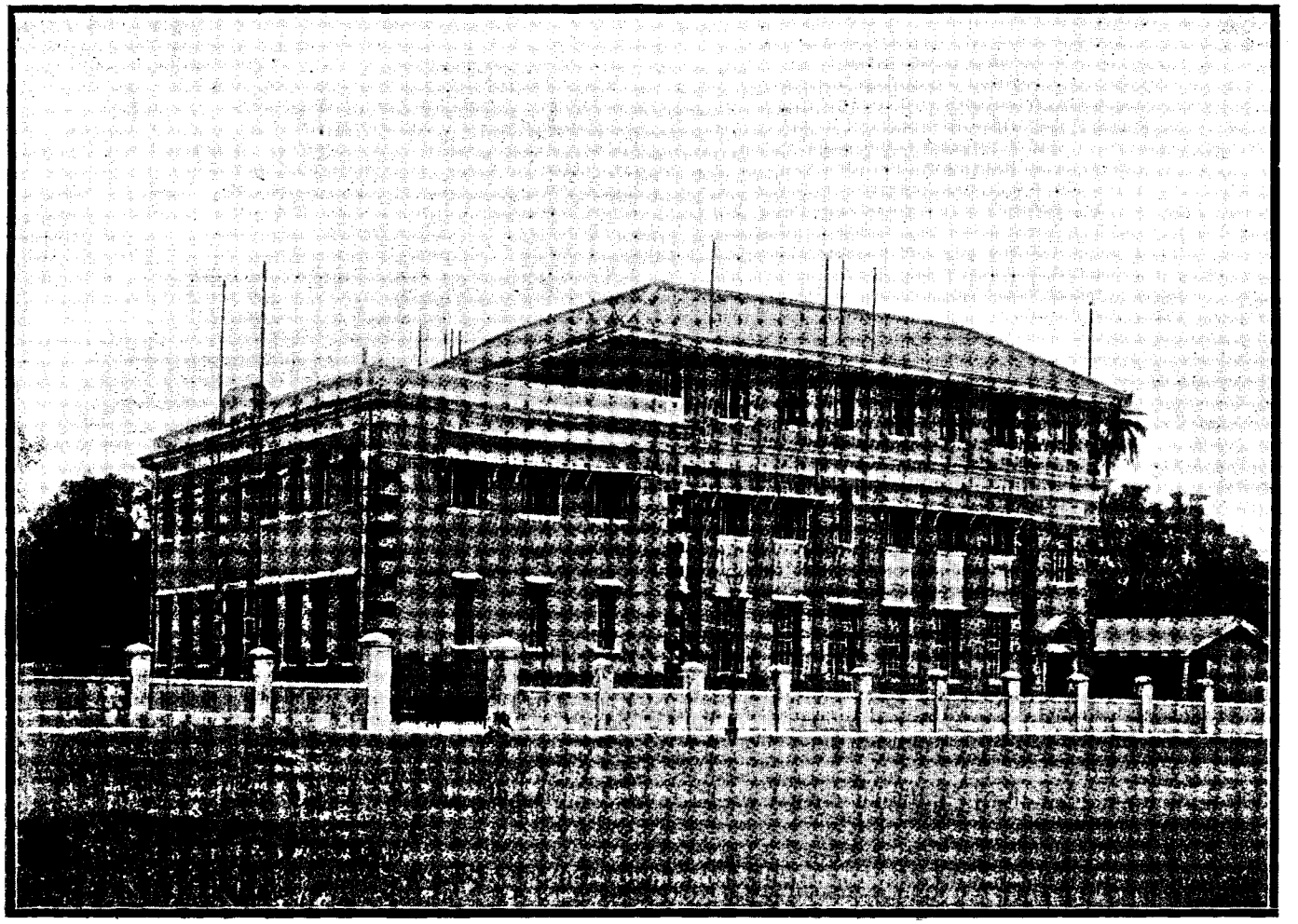
* Appendix XIV.



Technological Laboratory.

Sample Distribution List.

Province.	Samples.				Lots.				Yarn spun.			
	1924-25.	1925-26.	1926-27.	Totals 1924-27.	1924-25.	1925-26.	1926-27.	Totals 1924-27.	1924-25.	1925-26.	1926-27.	Totals 1924-27.
Bombay	18	26	22	66	36	52	44	132	103	152	132	387
Punjab	14	1	..	15	26	4	..	30	106	14	..	120
United Provinces.	7	..	6	13	14	..	12	26	27	..	36	63
Madras	2	19	48	69	4	38	96	138	12	108	266	386
Central Provinces.	2	..	3	5	3	..	6	9	8	..	18	26
Burma	..	6	..	6	..	12	..	12	..	28	..	28
Miscellaneous ..	3	5	..	8	3	10	..	13	3	30	..	33
Totals ..	46	57	79	182	86	116	158	360	259	332	452	1,043
Standard Cotton Tests	8	54	49	111	34	176	142	352	95	514	423	1,032
Total Tests ..	54	111	128	293	120	292	300	712	354	846	875	2,075

Note.—Each sample of cotton submitted for test is normally divided into two lots, each of which is then spun into three different types of yarn.

The following is a list of the standard cottons referred to in the above Table (page 39); the figures in brackets after the name of each cotton show the season for which the cotton was first tested as a standard :—

Bombay Standard Cottons.

1. Dharwar 1 (Kumpta) (1923-24).
2. Gadag 1 (Dharwar-American) (1923-24).
3. Surat 1027 A.L.F. (1923-24).
4. Wagad 4 (1925-26).
5. Wagad 8 (1925-26).

Punjab Standard Cottons.

6. Punjab-American 4F (1924-25).
7. Punjab-American 285F (1923-24).
8. Punjab-American 289F (1924-25).
9. Mollisoni (Punjab *desi*) (1925-26).

United Provinces Standard Cottons.

10. Aligarh A. 19 (1924-25).
11. Cawnpore K. 22 (1924-25).
12. Bundelkhand J.N. 1 (1924-25).
13. Cawnpore-American C.A. 9 (1924-25).

Madras Standard Cottons.

14. Coimbatore Co. 1 (Cambodia 295) (1923-24).
15. Nandyal 14 (Sircar 14) (1923-24).
16. Hagari 25 (Sircar 25) (1923-24).
17. Karunganni C (1923-24).

Hyderabad Standard Cotton.

18. Umri Bani (1924-25).

American Standard Cottons.

19. Mississippi (1923-24).
20. Memphis (1925-26).
21. Texas (1923-24).

As a general rule 50 lea tests, 100 single thread tests, and 100 twist tests are made on each type of yarn spun from a non-standard cotton, and 50 lea tests, 200 single thread tests, and 100 to 200 twist tests are made on each type of yarn spun from a standard cotton; it follows that the testing of the yarns spun in 1924-25 involved about 170,000 individual yarn-tests, whereas for the yarns spun in each of the years 1925-26 and 1926-27 the total number of tests required was nearly half a million. Thus it is evident that the Spinning Laboratory and the Testing Laboratory attained practically their maximum capacity in 1925-26.

Tests for Agriculturvl Departments.—The following is a statement of cottons tested for the various Agricultural Officers :—

BOMBAY.

(1) *Director of Agriculture, Bombay :*—One sample of a hybrid cotton, Sea Island x Gadag No. 1 (Indian Central Cotton Committee's Cotton-Breeding Scheme).

(2) *Cotton Breeder, Dharwar :*—Eight samples of Dharwar cottons, six being new types for comparison with Dharwar No. 1 and Gadag No. 1.

(3) *Cotton Superintendent, Dharwar :*—Two samples, one being ordinary Kumpta and the other a new type which is being tentatively distributed for district testing.

(4) *Cotton Physiologist, South Gujerat, Surat :*—Two samples of 1027 A.L.F. grown under different conditions.

(5) *Cotton Breeder, South Gujerat, Surat :*—Three samples, consisting of two new strains for comparison with local Broach.

(6) *Cotton Breeder, West Khandesh, Dhulia :*—Six samples, consisting of two new strains grown in different localities for comparison with the corresponding Roseum cotton.

UNITED PROVINCES.

Assistant Economic Botanist, Cawnpore :—Six samples, consisting of three new types—two of which were grown in different localities—for comparison with local Cawnpore cotton.

MADRAS.

(1) *Assistant Cotton Specialist, Koilpatti :*—Seven samples of the Karunganni type, six being new strains for comparison with the standard cotton Karunganni C7.

(2) *Cotton Specialist, Coimbatore :*—(*i*) Ten samples of Cambodia strain 440 grown under various conditions. (*ii*) Three samples of different Cambodia strains. (*iii*) Twenty samples, consisting of various cottons being subjected to comparative trials.

(3) *Deputy Director of Agriculture, III Circle, Bellary :*—Four samples, two being new types, the others being local Mungari and Hagari 25 respectively.

(4) *Assistant Agricultural Demonstrator, Tiruppur :*—One sample of Cambodia strain 295.

CENTRAL PROVINCES.

Economic Botanist, Nagpur :—Three samples, two being new strains for comparison with local Roseum.

MISCELLANEOUS.

A comparison of saw-ginned and roller-ginned cottons has been made for Surat 1027 A.L.F. and Nanded (Bani) cottons.

The cottons which have been chosen as standard Indian cottons are those more or less recent Agricultural Department selections which have been introduced into cultivation on a commercial scale. The work on these standard cottons is of importance from several points of view. In the first place, it furnishes the necessary standards by which to judge new cottons; secondly, it provides Agricultural Departments not only with information which they did not previously possess of the capacities of the cottons but also with annual test-results showing to what extent quality has varied from that of previous seasons; thirdly, it provides the cotton trade with very valuable information which has a definite bearing on the marketing values of these cottons. Furthermore, through the combined work in the Spinning and Research Laboratories, the results of spinning tests and fibre measurements are being accumulated for various cottons, and it is by the investigation of these results that it is hoped to solve the problem of their inter-relationship.

The recent Bulletin "Technological Reports on Standard Indian Cottons 1923-26" includes the results of the spinning and other tests on the standard cottons for the 1925-26 season as well as for the previous seasons for which the several cottons have been tested; the results for one new standard cotton—Mollisoni, a Punjab *desi* cotton—are also included. A summary of the results of these tests is given on page 51.

In the new bulletin the method of indicating spinning value is discussed at rather greater length than previously. Two methods are referred to: the first involves the determination of the spinning performance of various cottons at some one definite count; the second method involves the determination of the highest count of standard warp yarn into which each cotton can be spun, as deduced from spinnings of that cotton into a number of different counts. It is shown that the method adopted at the Technological Laboratory combines the advantages of both methods. Each sample is divided into two separate lots; each of these duplicate lots is then spun into three different types of yarn, so that the final decision as to the spinning capacity of a cotton is based on the test results for six different sets of yarns. In arriving at a conclusion as to the highest count of standard warp yarn for which the given sample is suitable, due weight is given to the performance of the sample during the various spinning processes, to the numbers of breakages on the ring frame, and to the yarn test results, chiefly those for counts, lea strength and twist. An extended discussion is included of the standards which have been adopted for twist and strength; figures for the count-strength products have also been introduced, in order to facilitate the comparison of strengths. A full explanation has also been added of the table showing the standard breaking loads which have been adopted for various counts of yarn subjected to the lea test, with a view to making quite clear the purpose of the table and the manner in which it is applied. A further addition in the new bulletin concerns the amount of waste made in the card. It is shown that the excess card room loss for samples of various weights over the loss sustained by a sample of 100 lb.

Director's Office.

weight represents in each case the same absolute weight, viz., 0·1 lb., this value being given independenrly by the 10-lb. samples, the 5-lb. samples, and the 2-lb. samples; it is concluded therefore that 0·1 lb. of cotton is necessary to load the card. One other point is also brought out concerning the action of the card. It is shown that the yarns from the 2-lb. samples almost invariably prove to be decidedly less neppy than yarns spun from larger samples. This is due to the fact that the card is cleaned after the passage of each lot of cotton; the cleaned card is at first able to extract practically all the nep from the cotton which passes through it; the amount of nep that appears in the web then gradually increases to a maximum, which is reached when about 1·5 lb. of cotton has passed through.

During the year a bulletin has been prepared on the effect of repeated blow-room treatment on certain baled cottons containing a large percentage of foreign matter. (Indian Central Cotton Committee Bulletin No. 10, Technological Series No. 5.) Duplicate lots of three different cottons—Punjab-American 289F, Punjab American 285F, and Hagari 25 (Westerns)—were respectively given 2, 3 and 4 treatments in the Crighton opener. One of the cottons—289F—was also given a normal treatment in the Crighton opener, but successive samples of this cotton were passed through the scutcher 3, 4 and 5 times respectively. Each lot of each cotton subjected to each treatment was then spun into three different counts of yarn. Observations were made of the behaviour of the cotton during working, and a record was kept of the number of breakages sustained on the ring frame during the spinning of each yarn. The results show that the effect of three or four treatments in the Crighton opener as compared with the normal two treatments is to increase the total waste by about three-quarters per cent. for each additional treatment; otherwise the extra treatment in the Crighton opener makes practically no difference to the behaviour of cotton in spinning, to the appearance of the yarn—including the evenness and the neppiness—or to the strength of the yarn. The effect of additional scutching was very similar to that of additional Crighton opening. It is pointed out that the results relate to small-scale tests, and that when cotton is being passed through in bulk somewhat different results might be experienced—in particular, if there should be a lack of uniformity in the flow of the cotton, such as to cause intermittent accumulation in the Crighton opener, damage to the cotton staple might ensue. References are also made to the possible effects of different beater speeds, different settings, and different formation of the grids of the opener. The chief conclusions drawn are :—(1) that so long as the cotton passes uniformly through the blow-room, repeated opening or scutching effects a slight improvement in the cleaning without detriment to the strength of the yarn; and (2) that once cotton containing foreign matter is pressed into bale form it may be very difficult, if not impossible, to remove the foreign matter completely, especially if it consists of fragments of seed-coat, so that the appearance of the yarn and its valu suffer accordingly.

Another bulletin published during the year deals with the effect of temperature and humidity on cotton spinning, with particular reference to conditions in Bombay (Indian Central Cotton Committee Bulletin No. 9,

Technological Series No. 4). In this bulletin the climatic conditions which prevail in Bombay are considered at length, tables being given to show the mean temperature and mean relative humidity normally experienced for each hour of the day for every day of the year ; a table is also given showing the frequency of occurrence of days of specified minimum humidity during the cold weather period of Bombay. Spinning tests were carried out on seven different cottons, each of which was spun in duplicate into three counts of yarn under three different sets of physical conditions of temperature and humidity. The spinning conditions are described as :—

(1) *Medium dry*, i.e., conditions obtained when the outside relative humidity is at its lowest ; (2) *normal*, i.e., conditions such that the temperature is about (but not below) 80° F. and the relative humidity is about 65 per cent. (but never below 60 per cent.) ; and (3) *monsoon*, i.e., conditions in which the temperature is 90° F. and the relative humidity is about 70 per cent.

Observations were made as to the effect of the several physical conditions on (1) comfort in working ; (2) workability of the material ; (3) appearance of the yarn ; (4) strength of the yarn. Each of the two lots of each cotton was spun into three counts of yarn under each set of conditions ; and each of the yarns thus obtained was subjected to 50 lea tests, 100 tests for single thread and extension, and 80 twist tests. The conclusions drawn from these tests are :—

(1) for comfort, the normal conditions are more satisfactory than either of the extreme conditions ;

(2) for workability of the material, the medium-dry conditions are not quite satisfactory in the card room, but the normal and monsoon conditions are satisfactory throughout ;

(3) the yarn spun under medium-dry conditions is the least satisfactory in appearance, and that spun under the monsoon conditions the most satisfactory, but these differences practically disappear when the yarn is conditioned ;

(4) within the limits of temperature and humidity within which these tests were carried out, it is impossible to lay down any hard and fast rule as to the conditions (medium-dry, normal, or monsoon) which give rise to the strongest yarns, the differences for the most part being inappreciable ;

(5) in general, it may be taken that the processing of the material in cotton spinning and the quality of the spun yarn are not seriously affected by the spinning processes being carried out at relative humidities as low as 40 per cent. ; but that, taking all things together, the normal conditions are probably best for carrying out cotton-spinning tests ;

(6) Bombay conditions are practically ideal for the processing of the material in cotton spinning.

Progress has also been made in two other directions referred to in last year's Annual Report. A number of cottons have been tested with a view to ascertaining whether the procedure adopted in the Spinning Laboratory of arranging the drafts, from the card onwards, so that the draft required in the ring frame for yarn of 30s counts is about six, and to obtain other counts from the same rovings merely by changing the draft in the ring frame—yields very different results from those obtained when " balanced drafts " are used. A number of tests have also been made in connection with the investigation of the possible deterioration of cotton on storage. It is hoped that it will be possible to describe the results of these two investigations in the next Annual Report.

Another investigation which has been started during the past year concerns the effects of spinning speed on the yarn breakages and on the spun yarn. As pointed out in " Technological Reports on Standard Indian Cottons 1923-26," when a given cotton was spun into a single count with more than one degree of twist, the stronger yarn (that with the higher twist) was actually spun at a slower speed, as shown by the front roller speed, than the yarn spun with a lower twist. This would be avoided if possible in general practice and the stronger yarn would be spun at the higher speed. The ring frame on which the yarn was spun is driven by a variable speed motor but the maximum speed possible had already been used in the spinning of the yarn with the lower twist. To correct this a special pulley was needed of a larger size which would enable a higher maximum speed to be attained. This new pulley has been obtained. It appears desirable to use this higher speed whenever possible, as by this means the time needed for carrying out the spinning tests can be materially reduced. The difficulty arose, however, in connection with the standard cottons, that, as these had been tested under certain speed conditions during previous seasons, if the speed conditions had been altered for succeeding seasons, comparison between different seasons might have been rendered invalid. For this reason the standard cottons of the 1926-27 season have been tested both at the old speed and at the new higher speed, in order to determine whether the difference in speed does actually make any and if so what difference to the results of the tests under the conditions in which they are carried out in the Technological Laboratory. The results obtained will be published in due course.

Certain new methods have been adopted in yarn testing. Reference was made in " Technological Reports " to the fact that the twist tests on singles yarn are far from satisfactory, and that a new method was being investigated. Although this investigation is not yet complete it has provided sufficient evidence to show that the new method proposed is very much superior to the old method, and it has therefore been adopted in connection with the standard cottons of the 1926-27 season. The new method consists essentially of making a grandrelle yarn at the top of each test bobbin after the cotton under test has been spun thereon. For the grandrelle yarn the single counts used are twice as fine as the test yarn being spun, so that the resulting grandrelle yarn is of approximately the same equivalent counts as the test yarn itself. The twist tests are then made on this grandrelle yarn

using 10-inch lengths in the twist testing machine. By this means it is possible to test a length ten times as great as was previously possible with the singles yarn, and further, the accuracy of an individual twist test is probably at least 100 times the accuracy of the previous tests on half-inch or one-inch lengths.

Another improvement concerns the determination of the single thread strength. The investigation of variation of the yarn on a bobbin referred to in "Technological Reports" has revealed how great is the effect on single thread strength of variation in the counts along the single thread. Roughly speaking, it may be said that within the limits of humidity experienced in the Technological Laboratory the effect of this variation of counts is about four times that caused by any likely differences in humidity. For this reason arrangements have been made whereby the counts of the yarn actually broken in the single thread strength tests are determined and allowed for, just as counts of yarn are determined in connection with the tests on lea strength.

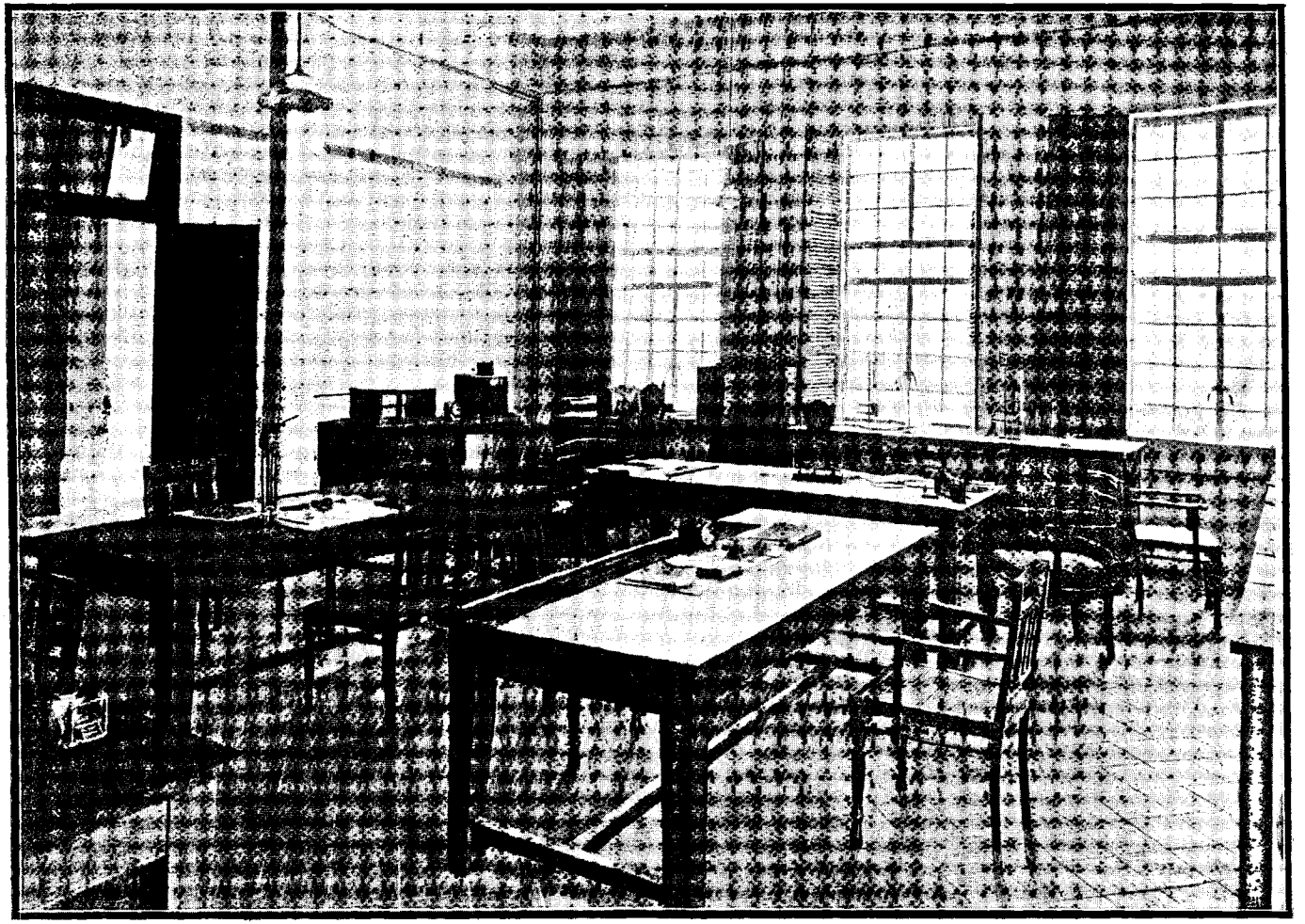
Lastly, as foreshadowed in "Technological Reports," ballistic tests are now being carried out on the standard cottons of the 1926-27 series. It remains to be seen how the results of these tests compare with the results of the ordinary lea tests and of the tests for single thread strength and extension.

II. RESEARCH LABORATORY.

Some idea of the rooms of this Laboratory and the equipment thereof is afforded by the various plates which accompany this report and which show :—

Plates	1 and 2 :	Research Laboratory.
Plate	3 :	Director's Office.
,,	4 :	Fibre Testing Laboratory.
,,	5 :	Chemistry Laboratory.
,,	6 :	Microscopy Laboratory.
,,	7 :	Workshop.
,,	8 :	Library and Committee Room.

The chief progress on the research side of the work has been in connection with the determination of fibre properties. This of course is in accordance with the general plan that the Research Laboratory should concentrate on that work which is most likely to lead to an understanding of the spinning process in terms of the properties of the raw materials ; and as methods are developed the examination of the fibre characters is extended. Details of this plan were briefly described in the Annual Reports for 1923-24 and 1925-26.



Fibre Testing Laboratory.

As in the past, all cottons submitted for spinning tests have been submitted to fibre tests also: but until recently Agricultural Department samples have been subjected to tests for fibre length and fibre-length distribution only. The standard cottons of the 1926-27 crop are however being tested much more extensively. It has been necessary in the first place to determine the number of tests of each kind which must be made in order to give a result of fair reliability. So far as fibre length and fibre-length distribution are concerned it has long since been found that four tests on the Balls Sorter combined with eight tests on the Baer Sorter are sufficient to determine these properties with considerable accuracy. These are the numbers of tests that are made on the standard cottons. Only half as many tests are made on the non-standard cottons; it has been found however that the results obtained from such tests have a good degree of accuracy. Five thousand fibre-strength tests on a single cotton sample have now been made; the statistical analysis of the test-results has not yet been completed, but already it appears clear that about 300 tests for fibre strength give a fairly accurate result. The standard cottons are therefore being tested for fibre strength, 300 tests being made on the Balls Magazine Hair Tester and 300 tests on the modified O'Neill Tester.

Some progress has also been made in the investigation of fibre rigidity, as well as of fibre-convolutions and ribbon-width, and of fibre-weight. Convolutions, ribbon-width, and rigidity have been found to be very variable indeed. Unfortunately the staff is not sufficient to cope with the numbers of tests which would be necessary to bring these tests in line with the tests for strength, as they involve much tedious work. At present, however, as a preliminary measure, the following routine has been worked out for application to the standard cottons. Tests are made on 100 fibres for the total number of their convolutions, for their average ribbon-width (measured in 10 places per fibre midway between convolutions), for their rigidity, and for their strength. Another 50 fibres are measured independently for each of these properties (except strength) by the Microscopist; their strength is measured by another observer. (The Microscopist measures the actual position and direction of each convolution and plots a diagram of these for the fibres which he measures.) In this way the various measurements of the different properties for each standard cotton are all made on the same fibres. The strength tests on these fibres are made on the Balls Magazine Hair Tester; another 150 fibres are tested on this machine alone in order to bring the total number of tests for strength on this machine up to the 300 referred to above.

For determination of fibre weight the sliver made for the Balls Sorter is used. Out of each group length of the deposit on the plush of the Balls Sorter, 10 groups each of 100 fibres are taken and weighed separately on a torsion balance. From the results of these weighings the weights of the fibres of different lengths are readily calculated. When these results are combined with the fibre-length distribution as determined on the Balls Sorter, and with the fibre weight per seed determined independently, it is possible to calculate the average number of fibres of each group-length per

seed of the given variety. This method of determining fibre-weight is checked by another method in which the assumption is made that the fibres, even although they are of different lengths, have the same weight per unit length. In this method a bunch of fibres is carefully cut so as to yield a number of lengths each 1 cm. long, and 10 groups each containing 200 of these 1 cm.-lengths are then weighed separately on a micro-balance. From the results the fibre weight per unit length is calculated.

III. GENERAL.

(1) *Staff.*—The staff of the Laboratory on August 31st, 1927, was as follows :—

Director :—A. James Turner, M.A., B.Sc.

Research Laboratory.

Physics Section :—

Junior Research Assistants :—N. Hari Rao, M.Sc.; Ram Saran Koshal, M.Sc.

Junior Testing Assistants :—S. S. Sukthankar, L.T.C. ; K. G. Deo ; H. B. B. Joshi, B.Sc. ; K. S. Marar, B.A. ; H. R. Nayak ; R. G. Panvalkar, B.Sc.

Chemistry Section :—

Senior Research Assistant :—D. L. Sen, M.Sc.Tech., M.Sc., A.I.I.Sc., A.I.C.

Microscopy Section :—

Junior Research Assistants :—H. N. Dutt, B.Sc., M.B.; Amarnath Gulati, M.Sc.

Instrument Maker :—Moreshwar M. Patke.

Spinning Laboratory.

Spinning Master :—R. P. Richardson, A.T.I.

Electrician :—K. S. Venkataram.

Yarn Testing Section :—

Statistician :—V. Venkataraman, M.A.

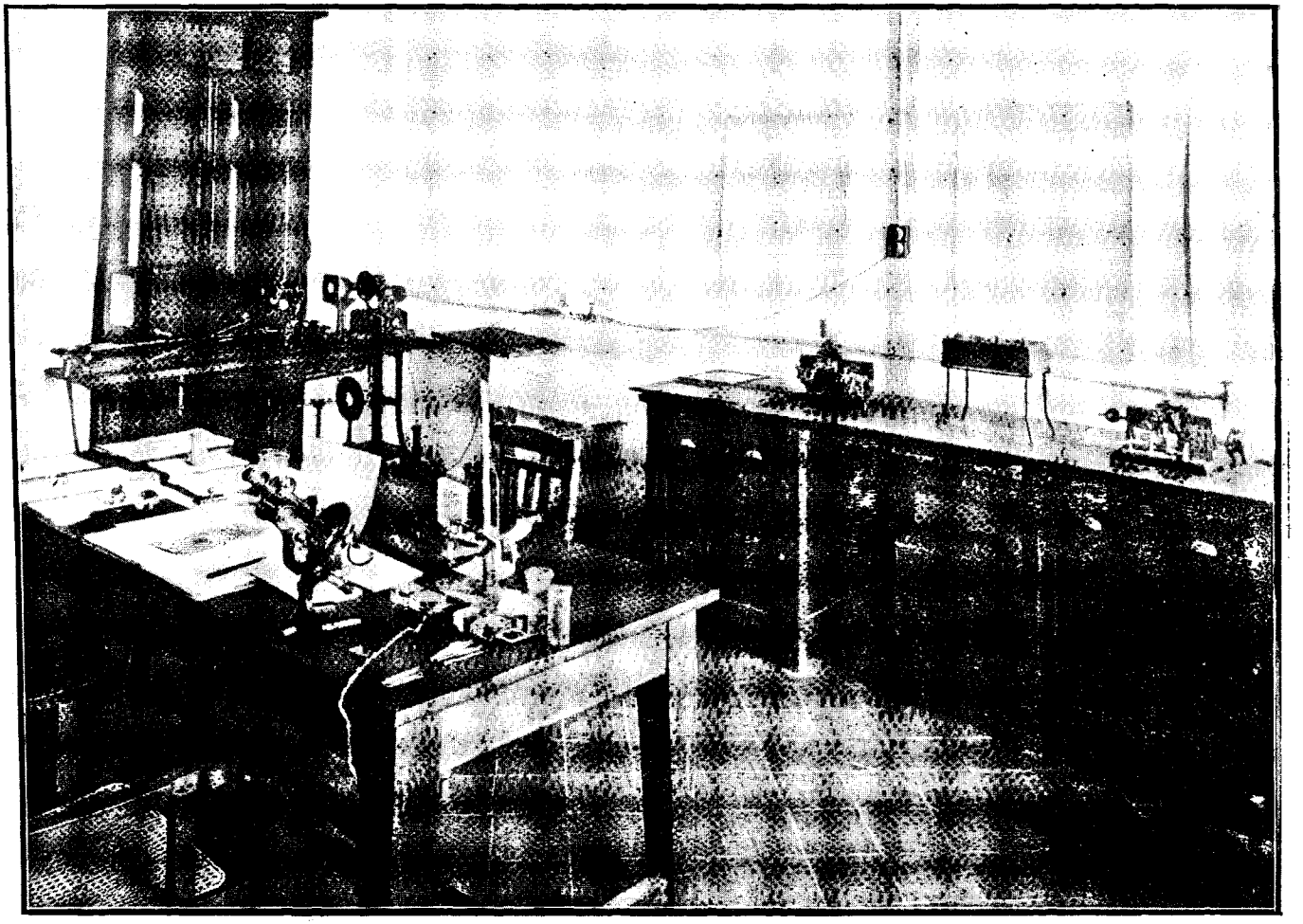
Junior Testing Assistants :—G. D. Bhide, B.Sc.; K. V. N. Nayar ; V. N. Modak, B.Sc.; L. V. Sundararaman, B.A.; P. S. Sambamurthi ; G. J. Kharkar, B. Sc.

Spinning Assistant :—N. Iyengar.

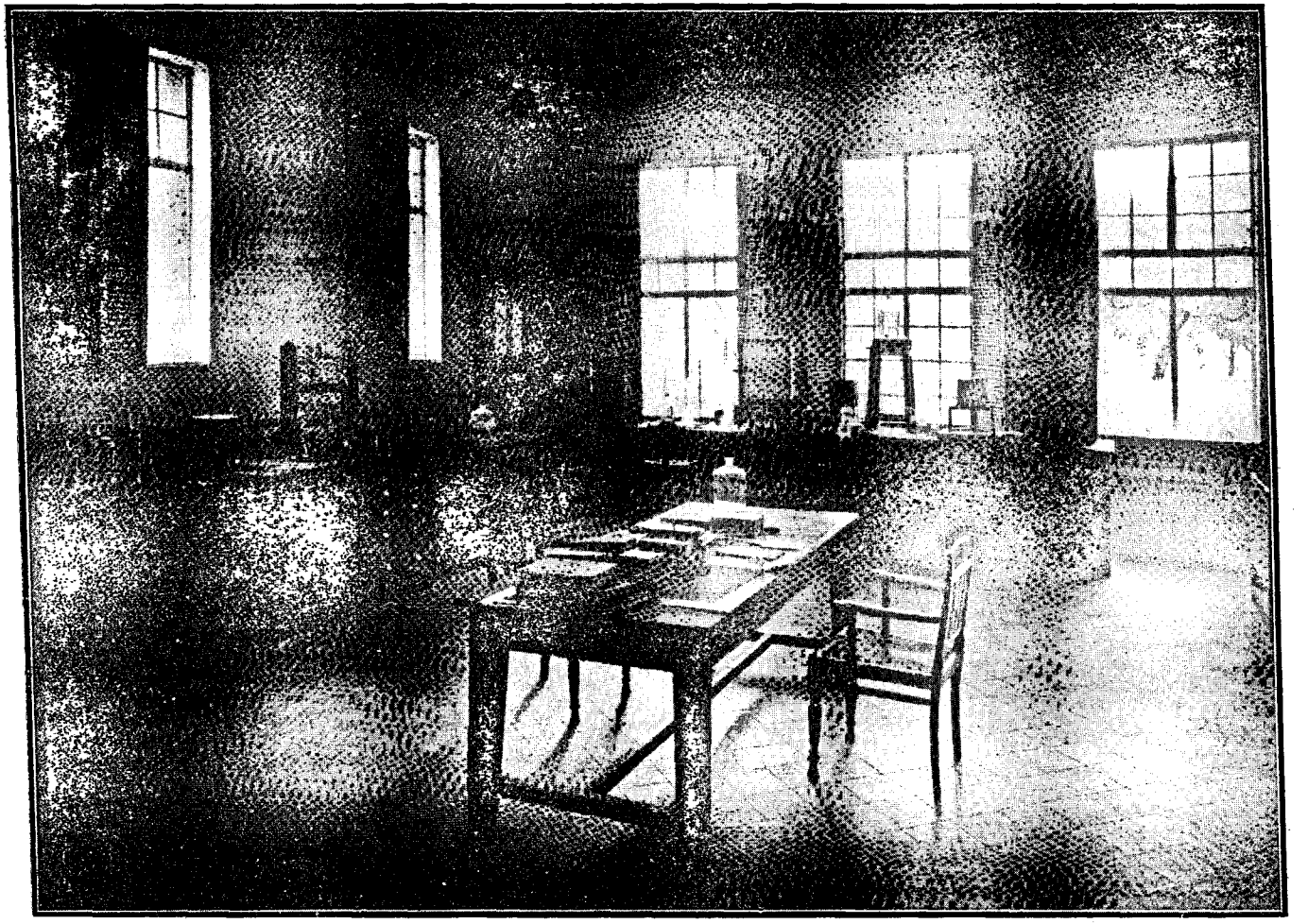
Clerk :—D. C. Mullan.

Director's Office :—

Head Clerk :—N. A. Gadre.
Stenographer :—B. P. Jain.
Clerk :—M. T. Sundaram.
Draughtsman :—B. G. Mehta.



Microscopy Laboratory.



Chemistry Laboratory.

The creation of a post of Assistant Technologist was sanctioned during the year and Mr. D. F. Kapadia, B.Sc. Tech. (Vict.), B.Sc. (Bom.), at present a research student at the Technological Laboratory, will take up the appointment early in the coming year.

A second Junior Microscopist was appointed in July to fill an existing vacancy. The number of Junior Testing Assistants has been increased to 12.

During the year the following resigned their appointments :—

1. Mr. M. C. Bathija—Junior Research Assistant (Physicist).
2. Mr. J. R. Desai—Junior Tester.
3. Mr. A. Krishnan—Junior Tester.

Mr. Turner returned from leave on October 28th, 1926, relieving Mr. W. G. P. Wall, Officiating Director.

Mr. Richardson went on short leave from June 6th, 1927 ; Mr. A. D. Walwyn, whose services were kindly placed at the disposal of the Committee by Messrs. W. H. Brady & Co., Ltd., officiated as Spinning Master during Mr. Richardson's absence.

(2) *Research Students.*—Messrs. S. E. Kumana and K. Sen have continued their work on the series of special cottons of different botanical species.

Mr. R. S. Koshal, having completed his investigation of the rigidity of the special series of cottons, has been studying the correlation between fibre-length, ribbon-width, fibre-strength, and rigidity. He has obtained some interesting results, on which the present routine testing in the Fibre Testing Section is based. Mr. Koshal is continuing this work, and succeeded Mr. Bathija as Junior Physicist on July 1st, 1927.

Mr. D. F. Kapadia has continued to make excellent progress in his special investigation on the variation of yarns ; it is on the basis of his results that the new procedure in single thread testing in the Yarn Testing Section has been developed.

Mr. R. L. N. Iyengar joined the Laboratory as a Research Student on 1st April, 1927, and is at present taking part in the routine examination in the Fibre Testing Section, where he is learning the methods of fibre testing and acquiring skill therein.

(3) *Buildings and Equipment.*—There have been no additions or alterations to the buildings or major equipment during the year. The following items have been added to the equipment :—

5 Self-recording thermo-hygrographs of the bi-metallic strip and hair type : three have been placed in different rooms used for fibre and yarn testing so as to provide complete records of temperature and humidity in these rooms.

2 Torsion micro-balances have been introduced for the determination of fibre weights, and of the counts of the small lengths of yarns used in single thread testing.

The apparatus required for the work on the rigidity of the cotton hair and a good deal of minor apparatus has been made in the Laboratory workshop.

(4) *Visitors.*—The Laboratory has continued to prove a source of general interest, and a number of parties and individuals have visited the Laboratory during the year. Among the visitors were the Marquis of Linlithgow and a number of members of the Agricultural Commission on Indian Agriculture, on November 2nd, 1926, and the Chairman and members of the Cotton Tariff Board, on December 21st, 1926.

(5) *Publications.*—The following have been published during the year :—

(*i*) Technological Reports on Standard Indian Cottons, 1923-26. (Bulletin No. 7, Technological Series No. 3, March 1927.)

(*ii*) The Effect of Temperature and Humidity on Cotton Spinning, with particular reference to conditions in Bombay. (Bulletin No. 9, Technological Series No. 4, August 1927.)

(*iii*) The Effect of Subjecting Cotton to Repeated Blow Room Treatment. (Bulletin No. 10, Technological Series No. 5, September 1927.)

(*iv*) The Use of Hydrocyanic Acid Gas for the fumigation of American Cotton on Import into India : Experiments on its lethal power for the Mexican Boll-weevil (*Anthonomus grandis*) and for the Grain-weevil (*Sitophilus oryzae*) ; on the extent to which it is absorbed by Cotton and Jute respectively ; and on a practical method for satisfactory fumigation on a large scale. (Memoir of the Department of Agriculture in India, Vol. X, No. V.)

As in previous years a contribution has been made to the *Bombay Cotton Annual* giving a general discussion of the results obtained during the year.

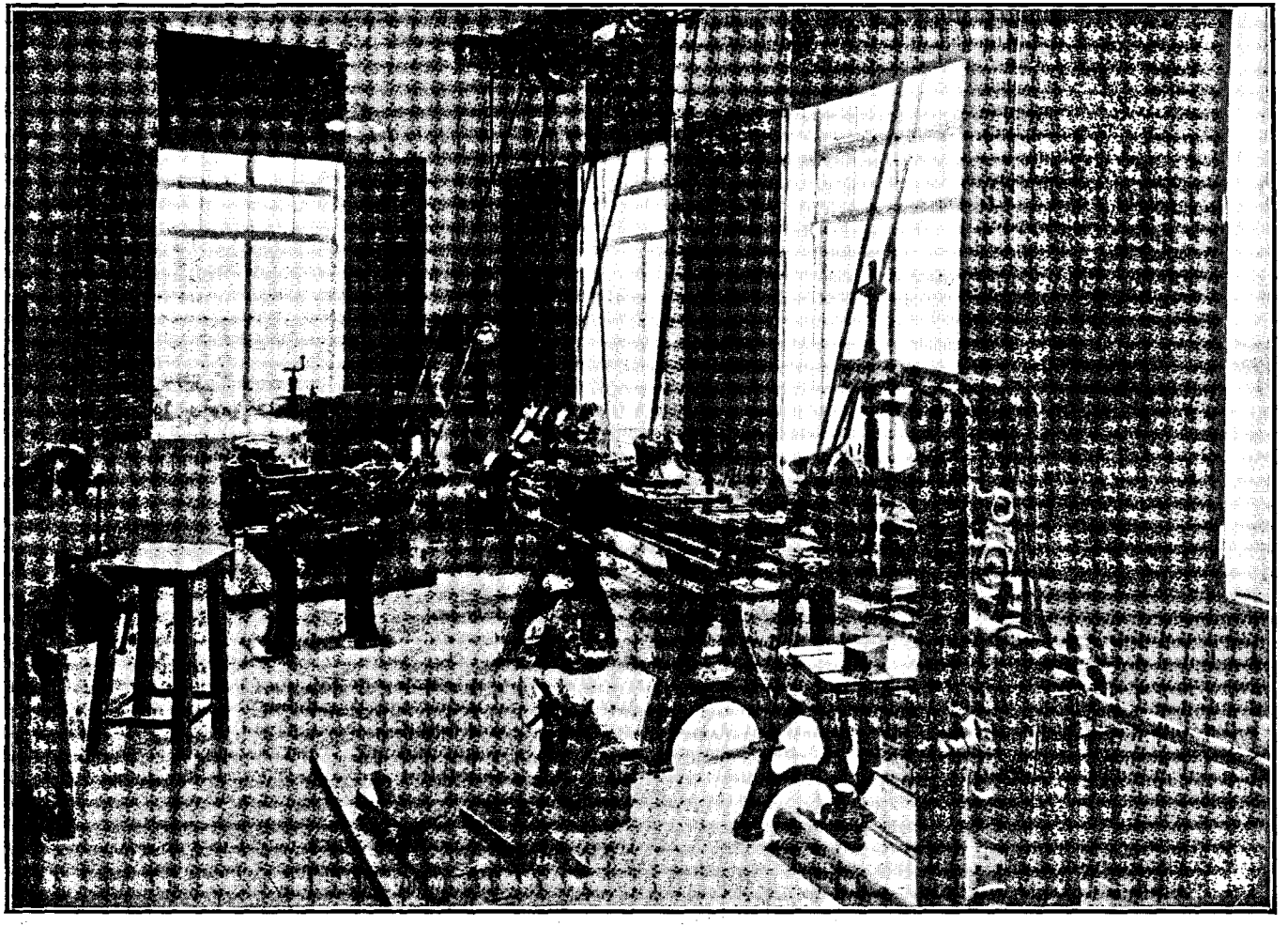
A. JAMES TURNER,

Director, Technological Laboratory.

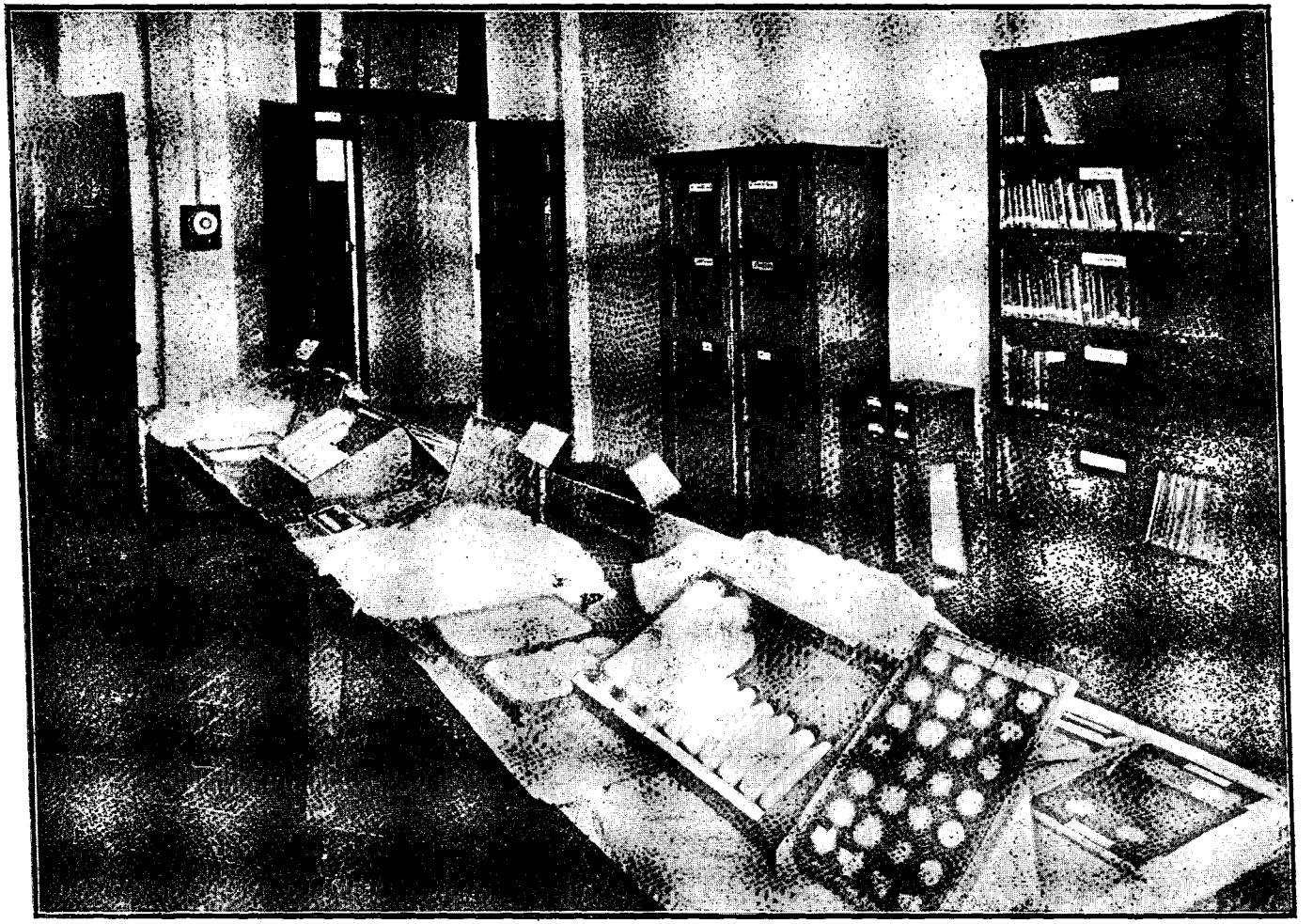
September, 1927.

Summary of Test Results on Standard Indian Cottons, 1923-26.

Sample No.	Cotton.	Season.	Counts Nominal.	Mean Fibre-Length, Balls Sorter (inch).	Mean Ribbon Width (inch).	Mean Convolutions per inch.	Waste Percentages. Blow Room Loss.	Card Room Loss.	Spinning Loss.	Total Loss.	Ring Frame Particulars. Mean Hanks per end (strands per hank)	Front Roller Speed R.P.M.	Front Roller Diameter (inch).	Draft.	Turns per inch.	Yarn Test Results. Lea. Counts Actual.	Strength (Lbs.)	Irregularity (%)	Count-Strength Product.	Single Thread. Strength (ozs.)	Strength Irregularity (%)	Weakness Percentage	Extension (%)	Extension Irregularity (%)	Turns per inch Actual.	Temperatures. (°F.) Spinning Room	Spinning Room	Testing Room	Relative Humidity. (%)	Highest Standard Warp Counts.
62	Dharwar No. 1 ..	1923/24	20	0.88	0.00067	139	6.5	7.2	0.5	13.8	0	184		1.49	16.85	19.8	97.5	4.8	1921	10.8	9.6	2.4	4.3	16.6	19.3	86	80	60	34
72	,,	1924/25	20	0.89	0.00068	122	14.7	8.5	0.9	22.2	33	183		1.46	16.85	19.1	100.2	4.7	1914	13.7	7.1	0	4.5	10.1	15.5	83	79	61	34
121	,,	1925/26	20	0.89	0.00067	122	12.2	7.1	0.5	18.8	8	182		1.46	16.85	19.6	90.6	4.9	1776	11.8	8.6	0.5	6.2	10.8	17.0	90	83	61	34
70	Gadag No. 1 ..	1923/24	20	0.90	0.00070	130	5.0	7.6	0.8	12.3	13	183		1.46	16.85	19.8	86.0	6.7	1703	10.2	9.7	2.8	3.6	14.4	18.9	84	77	55	36
71	,,	1924/25	20	0.85	0.00067	132	8.4	8.9	1.3	17.5	33	183		1.35	16.85	19.6	89.7	6.6	1770	9.4	7.4	0.2	4.9	9.6	15.0	83	78	64	26
131	,, ..	1925/26	20	0.83	0.00011	134	8.8	8.6	0.6	17.0	10	180		1.76	16.85	19.6	75.7	6.3	1454	10.7	12.5	4.3	9.1	11.7	18.4	91	67	65	30
104	Surat 1027 A. L. F. ..	1923/24	20	1.00	0.00099	140	6.4	6.0	0.6	14.3	10	182		4.13	16.85	19.9	75.2	6.1	1496	10.6	9.0	0	5.8	9.2	17.6	86	69	49	36
85	,,	1924/25	20	0.93	0.00072	128	5.2	7.6	0.4	12.5	0	181		4.00	16.85	19.5	96.0	4.1	1853	10.9	9.6	1.0	5.0	11.6	20.6	86	70	64	32
118	,,	1925/26	20	0.92	0.00072	127	5.3	7.3	0.7	12.7	15	182		4.13	16.85	19.9	72.9	5.0	1451	11.0	11.9	4.3	5.7	9.5	16.5	86	65	65	26
81	P. A. 4F ..	1924/25	20	0.81	0.00070	103	8.0	7.3	1.3	15.1	23	180		5.27	16.85	19.3	85.1	6.9	1256	8.8	13.7	7.0	4.8	17.5	18.0	73	75	62	22
127	,, ..	1925/26	20	0.81	0.00070	115	6.7	6.8	0.4	13.1	3	180		4.40	16.85	19.8	67.8	7.3	1322	9.3	12.4	5.5	5.9	18.3	16.2	91	63	59	22
106	P. A. 285F ..	1923/24	20	..	..	..	10.4	10.5	0.9	20.1	0	182		4.13	16.85	19.3	100.1	4.9	1932	12.6	9.9	2.0	6.6	7.2	18.0	84	68	57	34
85A	,,	1924/25	20	0.92	0.00073	140	4.7	9.5	0.6	14.4	15	181		4.26	16.85	19.0	97.1	6.7	1845	11.5	9.4	1.3	4.6	16.2	17.3	85	68	55	34
115	,, ..	1925/26	20	0.94	0.00069	134	10.9	11.2	0.5	21.7	19	182		4.17	16.85	19.3	82.8	4.9	1596	11.5	9.9	1.8	6.1	10.2	16.2	86	64	62	28
80	P. A. 289F ..	1924/25	20	1.01	0.00069	122	8.9	8.6	0.8	17.3	23	181		4.82	16.85	20.4	88.6	8.6	1807	11.8	8.2	2.3	6.6	8.4	21.8	74	72	61	36
130	,, ..	1925/26	20	1.00	0.00068	125	8.4	9.4	0.6	17.4	23	183		4.65	16.85	20.2	84.3	9.8	1763	13.0	9.6	3.5	5.6	8.8	17.5	91	62	64	30
122	Mollisoni ..	1925/26	8	0.72	0.00070	76	5.1	7.8	1.2	13.4	0	174		5.07	12.07	6.0	76.6	10.3	613	13.1	18.2	14.8	7.5	12.7	12.6	85	81	66	6
22	Aligarh A. 19 ..	1924/25	8	0.71	0.00078	129	4.1	7.0	1.2	11.9	20	221		4.80	12.07	7.8	84.1	15.7	656	17.7	16.1	9.4	5.3	19.6	13.1	90	65	54	6/8
111	,, ..	1925/26	8	0.72	0.00082	97	5.0	8.0	1.4	13.8	55	200		5.00	12.07	7.9	113.8	8.0	899	17.0	16.2	10.0	7.2	11.5	12.2	83	64	62	6
78	Cawnpore K. 22 ..	1924/25	10	0.80	0.00076	96	8.4	7.4	0.8	15.6	36	211		5.27	12.63	9.6	117.3	8.6	1126	19.7	13.3	5.0	7.4	10.7	13.9	76	75	61	12
128	,,	1925/26	10	0.80	0.00069	96	6.3	10.4	0.9	16.8	25	195		5.95	12.63	9.8	125.7	6.3	1232	19.0	12.1	2.8	5.7	15.4	14.3	92	62	64	12
78	Bundelkhand J.N.I ..	1924/25	10	0.78	0.00070	96	5.7	6.4	1.0	12.6	75	192		5.60	13.58	10.4	115.8	9.8	1204	18.8	10.8	3.0	0.7	15.4	13.7	80	77	56	12
113	,,	1925/26	10	0.77	0.00069	91	5.7	7.9	0.8	13.7	5	176		5.88	13.58	9.8	127.3	6.4	1248	20.0	13.2	6.3	17.8	11.3	13.9	85	62	67	12
77	Cawnpore C. A. 9 ..	1924/25	20	0.89	0.00065	144	6.8	7.3	0.9	14.3	10	184		4.49	16.85	19.2	84.4	7.3	1620	12.0	9.3	1.8	4.5	15.0	21.0	82	76	51	28
112	,,	1925/26	20	0.87	0.00065	114	6.6	9.5	0.5	15.9	18	182		4.00	16.85	19.0	83.6	6.1	1588	11.6	10.4	2.8	5.8	10.5	16.5	84	64	58	28
105	Cambodia 295 (Co. 1)..	1923/24	20	1.04	0.00069	91	4.5	6.4	0.5	11.0	15	181		4.22	16.85	19.7	84.7	6.2	1869	10.5	11.4	3.3	4.5	13.2	17.4	86	72	61	32
64	,,	1924/25	20	0.86	0.00064	91	4.5	7.5	0.5	12.0	8	180		4.22	16.85	19.6	82.7	5.9	1657	12.0	6.9	0	6.7	6.3	18.4	87	74	57	30
126	,,	1925/26	20	0.90	0.00063	97	4.8	6.1	0.4	10.9	3	182		4.40	16.85	19.7	88.3	4.9	1740	11.3	7.7	0.8	6.0	8.5	17.0	89	65	56	32
73	Nandyal 14 ..	1923/24	20	0.90	0.00074	86	6.0	6.8	0.9	13.0	10	182		4.35	16.85	19.4	93.5	6.0	1814	13.8	11.3	3.2	5.9	9.6	19.3	84	73	60	34
74	,,	1924/25	20	0.89	0.00066	93	8.2	8.1	0.8	16.2	28	180		4.34	16.85	19.2	96.8	7.4	1860	10.8	11.1	5.8	3.4	19.1	17.3	83	82	56	32
162	,,	1925/26	20	0.90	0.00070	89	8.6	8.9	1.1	17.6	23	179		4.27	16.85	19.9	77.2	8.9	1536	11.8	7.8	1.5	5.9	6.5	15.9	87	79	63	32
75	Hagari 25 ..	1923/24	20	0.90	0.00070	84	10.2	7.5	1.0	17.6	8	183		4.35	16.85	19.2	75.0	16.5	1440	11.8	9.4	0.3	4.5	11.0	17.7	82	82	79	24
76	,,	1924/25	20	0.88	0.00069	91	5.4	7.1	0.4	12.4	13	183		4.44	16.85	19.5	87.4	6.0	1704	11.1	8.1	1.0	4.8	12.8	17.7	80	72	60	28
163	,,	1925/26	20	0.85	0.00069	94	5.5	8.9	0.4	14.2	20	180		4.31	16.85	19.8	75.0	8.4	1485	10.7	10.4	1.3	6.1	10.2	16.7	85	82	52	26
107	Karungaani(C. ..	1923/24	20	0.98	0.00070	131	6.4	8.3	0.6	14.6	16	181		4.26	16.85	19.6	57.7	8.5	1142	8.4	13.1	4.8	4.8	19.5	17.5	79	64	68	18
86	,,	1924/25	20	0.85	0.00070	121	5.9	8.4	1.1	14.6	18	182		4.04	16.85	19.6	79.5	7.1	1558	9.6	11.0	3.0	5.3	8.4	16.9	87	71	55	26
175	,,	1925/26	20	0.83	0.00064	114	4.2	7.9	0.3	11.9	8	184		4.31	16.85	20.2	70.2	9.4	1418	10.7	13.4	4.8	5.5	10.5	17.4	87	68	62	26
62	Umri Bani ..	1924/25	20	0.85	0.00051	78	15.8	10.3	1.1	25.2	30	182		5.20	16.85	19.7	80.7	8.7	1196	9.4	13.5	8.5	5.2	11.0	19.7	79	72	66	22
114	,,	1925/26	20	0.83	0.00072	87	13.0	8.7	0.5	20.9	3	181		5.13	16.85	19.5	70.6	10.6	1363	9.7	13.0	3.3	5.1	16.3	17.7	85	64	61	24
53	Mississippi ..	1923/24	20	1.01	0.00065	142	4.4	7.4	0.5	11.8	18	157	1	4.35	16.85	19.5	95.3	6.4	1658	10.2	11.7	3.6	5.7	16.9	17.9	88	87	54	30
200	Memphis ..	1925/26	20	0.96	0.00062	110	6.6	8.1	0.4	14.5	5	159	1	4.85	16.86	19.7	103.8	6.2	2045	12.9	8.1	0	8.2	7.9	17.1	81	64	66	40
56	Texas ..	1923/24	20	0.85	0.00065	142	5.4	9.0	1.3	15.0	33	180		5.82	16.85	19.6	61.5	8.0	1218	8.6	14.6	7.8	4.0	13.5	16.8	88	80	80	18
208	,, ..	1925/26	20	0.85	0.00058	140	5.3	6.7	0.3	11.8	5	182		4.50	16.85	20.2	84.3	4.1	1703	12.0	9.8	0.8	7.8	6.7	17.0	80	67	66	30



Workshop.



Library and Committee Room.

APPENDIX I.

REVENUE DEPARTMENT.

BOMBAY CASTLE, 10*th August* 1926.

NOTIFICATION No. 3798/24.—Whereas, owing to the wide extension of the growing of similar high quality of cotton in areas I, II and III of the areas specified in Schedule I to Government Notification in the Revenue Department No. 535-A, dated 18th August 1923, it is no longer necessary to maintain the said areas as separate protected areas for the import of cotton into them by road;

Now, therefore, in exercise of the powers conferred by sub-section(1)of Section 3 of the Cotton Transport Act, 1923 (III of 1923), the Government of Bombay is hereby pleased to cancel the said notification as far as it prohibits the import of cotton by road from the Olpad-Ankleshwar area into the South-Surat area and the Surat area described in Schedule I to the said notification; provided that in the event of the cultivators being found to grow cotton of inferior quality hereafter in any of the said areas, this notification will be cancelled.

By order of the Government of Bombay (Transferred Departments),

G. A. THOMAS,
Chief Secretary to Government.

APPENDIX II.

COTTON IMPROVEMENT ACT—CHHOTA UDEPUR.

WHEREAS it is expedient to improve the quality of cotton grown in this State by prohibiting the import and cultivation of cotton of inferior staple, and to prevent adulteration of good cotton while being ginned or pressed by prohibiting malpractices in the mixing of cotton of different staples, it is hereby enacted that:—

(1) This Act shall be termed the Cotton Improvement Act of 1927.

(2) It shall extend to the whole of the Chhota Udepur State.

(3) It shall come into operation from the 15th August 1927.

2. In this Act, unless there is anything repugnant in the subject or context—

(*a*) "bale" means any pressed package of cotton of whatever size or density;

(*b*) "cotton" means every kind of unmanufactured cotton, that is to say, ginned and unginned cotton, cotton waste and cotton seed;

(*c*) "Cotton Ginning Factory" means any place where cotton is ginned or where cotton fibre is separated from seed by any process whatever whether involving the use of steam, water or of electrical power;

(*d*) "Cotton Pressing Factory" means any factory in which cotton is pressed into bales;

(*e*) "Cotton Waste" means droppings, strippings, fly and other waste products of a cotton mill, or of a cotton ginning factory, or of a cotton pressing factory but does not include yarn waste;

(*f*) "License" means a license granted under this Act;

(*g*) "Licensee" includes a managing agent or other person authorised under this Act to perform any of the duties of the licensee.

3. No person shall import into the State by road or rail cotton except under a license (Form A) granted by the Darbar.

Provided that a license is not necessary for cotton in transit through the State on the C. U. Railway to a destination outside the State.

4. No person shall knowingly grow in the State cotton other than that prescribed by the Darbar from time to time by Jahirnama.

5. No person shall erect a gin or press without first obtaining the sanction of the Darbar.

6. (1) No person shall gin or press cotton in a ginning or pressing factory in the State without first obtaining a license (Form B) from the Darbar.

(2) Licenses approved shall be granted on payment of such fees as may be determined by the Darbar.

(3) All such licenses shall be in force for the period from 1st September to 31st August annually and shall bear a number. This number shall be the number of the licensee's ginning or pressing factory and shall be displayed in a conspicuous manner in his factory.

(4) No license or right therein shall be transferred in any manner without the sanction of the Darbar.

(5) Every licensee shall furnish to the Darbar the name of his authorised agent, if any, for approval.

7. (1) All persons to whom licenses have been granted under the preceding section shall cause to be maintained—

(*a*) a ginning register in Form C.

(*b*) a press register in Form D.

(2) All ginning registers and press registers shall be maintained for the period 1st September to 31st August annually and shall be produced whenever required for inspection by the Darbar, the Revenue Officer, Thandars or other officials as may be prescribed by the Darbar.

(3) A copy of the ginning and press registers certified by the licensee, or by his duly appointed agent, shall be forwarded to the Revenue Officer on every Sunday while the factory is working.

(4) The Revenue Officer shall compile from the weekly returns a Statement in Form E and forward it to the Huzur on the 11th of every month.

8. No cotton shall be ginned or pressed by any licensee which is of a shorter staple than that grown in the State.

Provided that a licensee may gin or press cotton of a staple shorter than that grown in the State on his first obtaining the permission of the Darbar and on his satisfying the Darbar that he has made ample provision to prevent the admixture of short-staple cotton with long-staple cotton, either when it is being ginned or when it is being pressed.

9. All bales pressed by a licensee shall bear indelibly punched or stamped on one of its hoops the number of the licensee's factory followed by the letter C. U. and the last two integers of the year of the license as well as the serial number of the bale as shown on the press register. The last integer of the year and the first integer of the serial number of the bale shall be separated by a star.

Provided that the serial number of the bale may be stencilled in ink on the hessian covering of a lashed flat side of a bale in such a manner as to be clearly decipherable with a star placed immediately before and immediately after the serial number.

Provided that all bales of short-staple cotton shall bear in addition to the above marks, the letters SS clearly stencilled in ink on the hessian covering of the bale.

(2) All letters and numbers shall be in English; those on hoops shall in no case be less than one-quarter of an inch in length and those on hessian not less than two inches in length.

10. All weighments of cotton shall be in standard pounds and all weights used shall be in pounds or the following multiples of pounds, viz., 2,4,7, 14, 28, 56 and 112 pounds.

Provided that the entries in registers Form C and Form D be made on—

(*a*) Form C in maunds of 40 lbs. of 40 tolas.

(*b*) Form D in bales of 392 pounds net of cotton, exclusive of packing, or in bales of such other net weight as may be hereafter prescribed by the Darbar.

11. No scale, weighing apparatus or weights shall be used in any ginning or pressing factory for the purpose of weighing cotton or pressed bales, unless they have been certified and stamped by the Revenue Officer or such other officers as the Darbar may appoint.

(2) All scales, weighing apparatus and weights shall be checked for their accuracy by the Revenue Officer or other officer appointed by the Darbar annually on 1st September, and at such other times as may be deemed expedient by the Revenue Officer, or other officer appointed by the Darbar.

12. No bale shall be removed from a press unless it is marked according to the provisions of Section 9 and weighs 392 pounds net or such other weight as may be prescribed by the Darbar.

13. No person shall water any cotton at any time in any place.

14. No cotton shall be exported without a custom pass showing that the customs duty thereon has been paid.

(2) No custom export pass shall be issued in respect of baled cotton unless each bale of the consignment is marked according to the provisions of Section 9.

15. Every licensee shall permit the Darbar, Revenue Officer, Thandars or other officials prescribed by the Darbar to enter his gin or press at any time for the purpose of making any examination as may be deemed necessary of the ginning or pressing factory and of any registers.

16. Any person found guilty of a breach of provisions of this Act shall be liable to punishment as set forth hereunder:—

Breach of.	*Punishment.*
(*a*) Section 3 or 4 ..	Fine not exceeding Rs. 100 and forfeiture of cotton.
(*b*) Sections 5, 6, 7, 8, 11, 12, 13 or 14 ..	Fine not exceeding Rs. 500

Provided that in case of any subsequent breach of a same nature, the accused may be punished with a fine not exceeding twice the amount of the fine above mentioned.

17. Where the person guilty of an offence under this Act is a Company, every Director, Manager, Secretary and other servant thereof who is knowingly a party to the default shall also be guilty of the like offence and liable to the like punishment.

18. No prosecution under this Act shall be instituted without the previous sanction of the Darbar.

(2) All offences under this Act shall be tried by a First Class Magistrate.

(Sd.) J. C. TATE, Major,
Administrator, Chhota Udepur State.

CHHOTA UDEPUR,
Dated 31st *July* 1927.

FORM A.

Cotton Import License.

Serial No.

Mr.....of.....is hereby permitted to import.....maunds of cotton from.....by road/rail between.....and.....

CHHOTA UDEPUR,

Date.

Cotton Import License.

Serial No.

Mr.....of.....is hereby permitted to import.....maunds of cotton from.....by road/rail between.....and.....

CHHOTA UDEPUR,

Date.

FORM B.

Serial No. *Cotton Ginning Factory / Cotton Press Factory License.*

Mr.....of.....is hereby permitted to work a Cotton Ginning Factory / Cotton Press Factory at.....Taluka.

The serial number shown above is the distinguishing number of his factory, and this number must be displayed in a conspicuous manner in his Factory.

The name of licensee's authorised Agent is.....

CHHOTA UDEPUR,

Date.

FORM C.

Ginning Register for the year commencing 1st September 19 .

Name and number of Factory.....Name and address of owner.....Name and address of owner's Agent.....

Serial number.	Name of persons for whom cotton ginned.	Quantity.		Long or short staple.	Date on which ginned.	Remarks.	Signature of owner or owner's Agent.
		Maunds.	Seers or pounds.				

FORM D.

Press Register for the year commencing 1st September 19 .

Name & No. of Factory.....Name & address of owner.....Name & address of owner's Agent.

Press Mark C.U.....

Date.	Total number of bales pressed per diem.	Serial numbers of bales pressed per diem.	Long or short-staple cotton.	Name of persons for whom pressed.	Average weight of bales pressed per diem in pounds avoir.	Serial Nos. of bales despatched from factory and date of despatch.	Destination.	Signature of owner or owner's Agent.

FORM E.

The Huzur

Monthly Statement of Cotton Ginned and Pressed for the month of.....19 .

(To be submitted on the 11th of every month).

Factory No.	Amount of cotton ginned.				Number of bales pressed.		Number of bales despatched from factory.		Remarks.
	During the month.		Since 1-9-19		During the month.	Since 1-9-19	During the month.	Since 1-9-19	
	Mds.	Seers.	Mds.	Seers.					

Note.—Information regarding short-staple cotton will be furnished below that relating to long-staple cotton.

Revenue Officer.

APPENDIX III.

FORT ST. GEORGE, *November* 18, 1925.

(G. O. PRESS No. 1657, DEVELOPMENT).

NOTIFICATION UNDER SECTION 3 OF THE COTTON TRANSPORT ACT, 1923 (III OF 1923), AS AMENDED BY ACT No. XXXIV OF 1925.

No. 344.—Whereas it is necessary for the purpose of maintaining the quality and reputation of the cotton grown in the areas in the Madras Presidency mentioned in Schedule I hereto appended.

Now, therefore, in exercise of the powers conferred by sub-section (1) of Section 3 of the Cotton Transport Act, 1923 (III of 1923) as amended by Act No. XXXIV of 1925, the Government of Madras are hereby pleased to prohibit the import of cotton into the said areas by rail and sea save under and in accordance with the conditions of a license prescribed in this behalf subject, however, to the exception specified in clause (3) below.

(2) The Government of Madras are further pleased to prohibit, under sub-section (2) of Section 3 of the said Act, the delivery to, and the taking of delivery by, any person, at any railway station situated in any of the protected areas and specified in Schedule II hereto appended, of any cotton when such cotton has been consigned from a railway station not situated in the said area unless such person holds the prescribed license for the import of cotton into the said area, subject, however, to the exception specified in clause (3) below.

(3) The transport of cotton lint into Tiruppur-Cambodia protected area as defined in Schedule I from the districts of North Arcot, South Arcot, Chittor and Chingleput and from the Atur, Dharmapuri, Hosur, Krishnagiri, Omalur, Salem and Uttangarai taluks of Salem District is exempted from the operation of clauses (1) and (2) and permitted without restriction.

SCHEDULE I.—PROTECTED AREAS.

I. *The Northerns and Westerns area.*—Consisting of the districts of Anantapur, Bellary, Cuddapah and Kurnool.

II. *The Tiruppur-Cambodia area.*—Consisting of the district of Coimbatore, the Karur, Musiri and Kulittalai taluks of Trichinopoly District, the Namakkal, Tiruchengodu and Rasipur taluks of Salem District and that portion of the Madura District lying to the north and west of the Vaigai River.

III. *The Tinnevelly area.*—Consisting of the district of Tinnevelly and that portion of the districts of Ramnad and Madura lying to the east and south of the Vaigai River.

SCHEDULE II—RAILWAY STATIONS.

I. *The Northerns and Westerns area.*—All stations from Kottur to Hospet, both inclusive, from Rayadrug to Bellary, both inclusive, from Hospet to Guntakal, both inclusive, from Guntakal to Hindupur, both inclusive, from Guntakal to Tungabhadra River, both inclusive, from Dharmavaram to Tanakallu, both inclusive, from Guntakal to Cumbum, both inclusive, on the Guntakal-Bezwada line, from Dhone to Kurnool, both inclusive, and from Guntakal to Settikunta, both inclusive.

II. *The Tiruppur-Cambodia area.*—All stations from Podanur to Kallar, both inclusive, Madukarai and all stations from Podanur to Pollachi, both inclusive, from Podanur to McDonald's Choultry, both inclusive, from Madura Bridge to Samudram, both inclusive, and from Erode to Marudur, both inclusive.

III. *The Tinnevelly area.*—All stations from Maniyachi to Madura, both inclusive, from Maniyachi to Tankasi, both inclusive, from Maniyachi to Tuticorin, both inclusive, from Tinnevelly to Tiruchendur, both inclusive, and from Madura to Mandapam, both inclusive.

APPENDIX IV.

AREA (IN THOUSANDS OF ACRES) AND YIELD (IN THOUSANDS OF BALES OF 400 LBS.) OF MADRAS COTTONS BY VARIETIES.

1. Coimbatore Area.

	Irrigated Cambodia.		Dry Cambodia.		Irrigated Karunganni.		Dry Karunganni.		Uppam.		Nadam, Bourbon.		Tinnevellies.		Total.	
	Area.	Yield.	Area.	Yield.	Area.	Yield.	Area.	Yield.	Area.	Yield.	Area.	Yield.	Area.	Yield.	Area.	Yield.
*Coimbatore District ..	109	80	33	8	14	5	108	22	23	4	14	1	..	2	301	122
Karur Taluk	10		..		..		..		..		4		..		14	
Palni Taluk	12		6		..		..		..		..		9		27	
Total ..	131	80	39	8	14	5	108	22	23	4	18	1	9	2	342	122

2. Salem Area.

Chittoor District ..					Small area of Cambodia.											
Chingleput District ..	..		..		..		..		..				..		..	
South Arcot District ..					Small area of Cambodia and Uppam											
North Arcot District ..	1		5		..		..		..		..		..		6	
Salem District	22	16	38	10	..	..	..	..	5	4	2	¼	..	..	67	30
Trichinopoly District—																
North of Cauvery ..	3		7		..		..		17		3		..		30	
Total ..	26	16	50	10	..	..	..	..	22	4	5	¼	..	..	103	30

*Includes 20 acres in Pollachi Taluk rain-fed but equivalent to irrigated.

APPENDIX IV.—(*Contd.*)

AREA (IN THOUSANDS OF ACRES) AND YIELD (IN THOUSANDS OF BALES OF 400 LBS.) OF MADRAS COTTONS BY VARIETIES.

3. Dindigul Area.

	Irrigated Cambodia.		Dry Cambodia.		Irrigated Karunganni.		Dry. Karunganni.		Uppam.		Nadam Bourbon.		Tinnevellies.		Total.	
	Area.	Yield.	Area.	Yield.	Area.	Yield.	Area.	Yield.	Area.	Yield.	Area.	Yield.	Area.	Yield.	Area.	Yield.
Trichinopoly District—																
South of Cauvery ..	6		23		..		..		..		..		..		29	
Madura District—																
North of Vaigai ..	21	17	50	16	..		..		..	¼	..		8	3	79	36
Ramnad District ..	1		..		..		..		..		..		5		6	
Tanjore District ..	..		..		..		..		2		..		..		2	
Total ..	28	17	73	16	..	..	..	..	2	¼	..	..	13	3	116	36
Salem and Dindigul ..	54	33	123	26	..	..	..	..	24	4¼	5	¼	13	3	219	66

4. Tinnevelly Area.

Madura District—																
South of Vaigai ..	4		13		..		..		..		..		86		103	
Ramnad District ..	20	19	7	7	..	..	..	..	..	..	..	..	222	187	249	213
Tinnevelly District ..	8		9		..		..		..		..		375		392	
Total ..	32	19	29	7	..	..	..	..	..	..	..	..	683	187	744	213

APPENDIX V.

EXTRACT FROM BY-LAWS OF THE EAST INDIA COTTON ASSOCIATION.

BY-LAW 53—*Stations tenderable.*—Against the Hedge Contracts shown in column (1) of Schedule B, the contracts shown in the corresponding column (2) and the cotton pressed only at the places enumerated in the corresponding column (3) subject to such modifications as the Board may from time to time make thereon against each contract, shall alone constitute a fair tender provided that:—

(1) It is of the description sold and provided that if pressed after 1st September 1926 it bears press marks in conformity with the provisions of the Cotton Ginning and Pressing Factories Act, 1925, or with the law in force for the marking of bales in any Indian State.

BY-LAW 66—*Stations tenderable.*—Against delivery contracts, only cotton pressed at the place or places mentioned in the Contract shall constitute a fair tender, provided it is of the description sold. Where a district is mentioned in such contract only cotton pressed at one or more of the stations enumerated in column 3 of Schedule B (as modified by the Board from time to time) shall constitute a fair tender provided it is of the description sold and provided that if pressed after the 1st September 1926 it bears press marks in conformity with the provisions of the Cotton Ginning and Pressing Factories Act, 1925, or with the law in force for the marking of bales in any Indian State.

BY-LAW 61—*Rejections of Tenders.*—(1) Cotton will be considered "not a fair tender" if it is declared not of the description sold, or if it does not conform to By-law 53, in which case the cotton shall be rejected. The buyer shall be entitled to invoice it back at the spot rate of the day following that on which the final award is given under By-law 35 or 37 or, in cases of arbitrations other than those regarding quality under By-law 38, at such rate as may be fixed by the arbitrators or umpire, and, in case of appeal, by the Board.

Such a tender shall also be liable to such penalty not exceeding Rs. 50 per candy as may be fixed and imposed by the Board. When the penalty sought to be fixed under this clause is more than Rs. 25 per candy, such increased penalty as may be thought fit will only be levied in case 75 per cent. of the Directors voting at the meeting are in favour of it.

If the cotton be found to be fraudulently packed it shall be similarly penalised.

APPENDIX VI.

AMENDMENTS PROPOSED TO THE BOMBAY COTTON GINNING AND PRESSING FACTORIES RULES, 1925.

Delete the present Rules 6 (2), 7 and 8 and substitute 6.....

(2) On and after the first day of September 1928 no weights shall be used in any cotton ginning or cotton pressing factory unless duly certified in accordance with these rules.

(3) On and after the same date any weight not so certified which is found in the possession of the owner of any cotton ginning or cotton pressing factory shall be deemed to have been used in such factory.

6A. The Inspector shall only certify a weight which—

(*a*) does not deviate from the standard weights supplied to him in excess of the following limits :—

Denomination of weight.	*Maximum deviation permissible.*
1 lb. 2 lbs. 4 lbs.	½ tola.
7 lbs. 14 lbs. 28 lbs.	1 tola.
56 lbs.	2 tolas.
112 lbs.	4 tolas.

(*b*) does not in his opinion facilitate the perpetration of fraud ;

Example.—A weight which has a removable or split ring shall be deemed to facilitate the perpetration of fraud.

(*c*) has the denomination of the weight clearly and indelibly marked on it;

(*d*) is free from flaws and smooth on all its surfaces ;

(*e*) is provided with one adjusting hole in its under surface. The adjusting hole shall not extend to the upper surface of the weight and shall be undercut so that the lead adjustment is not removable.

Exception.—Any weight offered for certification at the first inspection of a factory by the Inspector under these rules may have two adjusting holes.

6B. A weight shall be deemed duly certified when it has been stamped on the lead adjustment by the Inspector in such a way as to cover the lead as far as possible with a monographic stamp on which the letters B O M have been incorporated.

6C. If on any subsequent test the Inspector shall find that any weight does not fulfil the conditions of Rule 6A above, he shall obliterate all the impressions on the lead adjustment of the weight and the weight shall be deemed not to be duly certified.

7. (1) On and after the first day of September 1928, no scales or weighing apparatus shall be used in any cotton ginning or cotton pressing factory for the purpose of weighing kapas, ginned cotton, pressed bales or any other cotton unless they have been duly certified by the Inspector.

(2) On and after the same date if any scales or weighing apparatus not duly certified, are found in the possession of the owner of any cotton ginning or cotton pressing factory, the burden of proof that the scales or weighing apparatus have not been used for the said purpose shall lie upon the said owner.

(3) All such scales and weighing apparatus shall be retested at least once a year by the Inspector.

Exception.—Rules 7 (1), (2) and (3) shall not be held to include a weighing machine in a cotton pressing factory for weighing loose cotton immediately prior to baling.

7A. The Inspector shall only stamp scales and weighing apparatus that do not facilitate the perpetration of fraud and that are sensitive and accurate.

Example.—Scales to any part of which any attachment for adjusting the balance has not been permanently fastened shall be deemed to facilitate the perpetration of fraud.

7B. For the purpose of testing the sensitivenes and accuracy of scales, the Inspector shall make the following tests :—

Sensitive Test.—Scales used or intended to be used for weighing kapas, ginned cotton or other cotton shall be balanced and loaded with a standard weight of 56 lbs. in one of the pans.

An additional weight of two tolas in either pan shall be sufficient to turn the beam an appreciable amount.

Accuracy Test.—Scales used or intended to be used for weighing kapas, ginned cotton or other cotton shall be tested for accuracy by balancing the beam with a standard weight of 56 lbs. in one of the pans. The beam shall then be reversed and a weight of 4 tolas or less shall be sufficient to restore balance.

Sensitive Test—Scales used or intendedto be used for weighing bales or cotton shall be tested by sensitiveness by balancing the scales with a bale of cotton or its approximate equivalent of 400 lbs. in the pans. An additional weight of 10 tolas in either pan shall be sufficient to turn the beam an appreciable amount.

Accuracy Test.—Scales used or intended to be used for weighing bales of cotton shall be tested for accuracy by balancing a cotton bale or its approximate equivalent of 400 lbs. in the pans. The beam shall then be reversed and a weight of 15 tolas or less shall be sufficient to restore balance.

7C. The owner of a cotton ginning or cotton pressing factory containing a platform weighing machine or a weigh-bridge used for weighing kapas, ginned cotton or pressed cotton shall, in order to facilitate the testing of the apparatus, maintain in or adjacent to the factory a total supply of weights of not less than 448 lbs.

7D. The Inspector shall make the following tests on weighing apparatus other than scales :—

(*a*) *On a platform weighing machine.*—The machine shall first be tested for sensitiveness by adjusting the zero adjustment until the machine balances with no load on the platform. The platform shall then be loaded with a weight of 1 cwt. and balanced. An additional load of 10 tolas or ¼lb. shall cause the indicating lever to move appreciably. The platform weighing machine shall then be loaded with weights of 2, 3 and 4 cwts. according to the capacity of the machine, and after balancing in each case, additional weights of 20, 30 or 40 tolas or ½, ¾ or 1 lb. respectively, shall cause the indicating lever to move appreciably.

(*b*) The platform weighing machine, if sufficiently sensitive, shall be loaded successively with weights of 1, 2, 3 and 4 cwts. according to its capacity and balanced at each of these loads. The deviation from accuracy shall not exceed 10, 20, 30 or 40 tolas respectively, i.e., $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ or 1 lb.

(*c*) *Weigh-bridges.*—The weigh-bridge shall first be tested for sensitiveness by adjusting the zero adjustment so that the machine balances with no load on the platform. It shall then be balanced with a load of 448 lbs. on the platform. An additional load of 1 lb. on the platform shall cause the scale arm to move appreciably.

(*d*) The weigh-bridge, if sufficiently sensitive, shall be tested for accuracy by loading and balancing the platform with a weight of 448 lbs. The indicated weight shall not deviate more than 1 lb. from the actual weight.

7E. The Inspector shall stamp scales with a single monographic impression in which the letters B O M have been incorporated. The impression shall be made on a lead plug of at least $\frac{3}{8}$" diameter fitted into the scale beam immediately under or over the central knife edge. The plug shall be made irremovable by undercutting or in some other suitable manner and its surface shall be even and below the surface of the beam. The plug shall not penetrate the beam. After scales have been so stamped they shall be deemed duly certified.

7F. The Inspector shall stamp platform weighing machines or weigh-bridges with a single monographic impression in which the letters B O M have been incorporated. The impression shall be made on a lead plug in a conspicuous position either on the shoulder or the opposite end of the indicating lever. The plug shall be at least $\frac{3}{8}$" diameter and be made irremovable by undercutting or some other suitable manner. Its surface shall be even and below the surface of the indicating lever. After platform weighing machines or weigh-bridges have been stamped they shall be deemed duly certified.

7G. If on any subsequent test the Inspector shall find that the deviation of sensitiveness or of accuracy is double that permissible at the initial test, he shall obliterate the impression on the lead plug and the scales or weighing apparatus shall be deemed not to be duly certified.

8. In these rules "Inspector" means any person whom Government may by notification appoint for the purpose of inspecting, testing, stamping and certifying the weights and scales or weighing apparatus used or to be used in cotton ginning or cotton pressing factories.

8A. If any difference arises between the Inspector and any other person as to the meaning or construction of these rules or as to the method of testing or verifying any weight, scales or weighing apparatus, such difference shall, at the request of either party (unless the Inspector be the Collector) be referred to the Collector whose decision shall be final.

8B. Every owner of a cotton ginning or cotton pressing factory shall maintain a register in which shall be entered the number and description and date of certification of every weight, scales or weighing apparatus used in the factory. The Inspector shall sign each completed entry in the register.

APPENDIX VII.

THE DAMAGE CAUSED TO COTTON BY WATERING

SOME years ago it was a common complaint that Indian cotton was watered during pressing and that this practice caused great deterioration in the cotton. Since then such complaints have been less common but unfortunately this year there has been a recrudescence of the practice. The Central Cotton Committee desire to bring to the knowledge of the public the harm that this practice causes and to show how eventually it leads to loss to the grower.

The objections to watering are the following:—

(1) Watered cotton deteriorates in appearance, the leaf turns black and the cotton becomes discoloured—this leads to a reduction in price. Eventually the cotton of the district gets a bad name resulting in permanent undervaluation to the detriment of the grower.

(2) Cotton which has been pressed damp forms hard lumps which are difficult to deal with in the mill; hence spinners pay lower prices for such cotton.

(3) Watered cotton deteriorates greatly on storage. Dry cotton in bales can be kept for months without any harm; damp cotton gradually deteriorates on keeping and the cotton becomes weak and less valuable to the spinner. The damage is caused by micro-organisms which penetrate the fibre and destroy its strength—these tiny organisms can only grow in the presence of moisture.

(4) Actual spinning tests have shown that cotton which has been watered during pressing produces weaker yarn than dry cotton.

This being the case the question arises why cotton merchants and press-owners water their cotton. The only answer is that it is an attempt to increase the weight of the cotton. This in itself would be a foolish practice, even if no other harm resulted, for the mill buyer will soon realize what is happening and refuse to pay for water at cotton prices. But the result is worse than this. Berar cotton for example can be watered to the extent of, say, 10 lbs. per bale which represents a gain to the seller of, say, six rupees per candy. The damage done is far greater. At the present moment there are in Bombay hundreds of bales of watered cotton (from the Central Provinces and Berar) which are only saleable at poor rates even in a 'firm' market. Had the market been 'easy' it is doubtful if such cottons would have been saleable at all. For good dry Berar cotton Rs. 11 per candy above the Fine Oomras contract price is being paid at the present time while watered cotton can only be sold at Rs. 5 to Rs. 7 below Oomras. This is a difference of Rs. 18 per candy against the Rs. 6 which the up-country merchant gained by watering.

Other Bombay merchants have found that cotton, not *badly* watered, which they hoped to sell at Rs. 5 above Oomras is now selling at Rs. 5 off. Dry Khandesh cotton which is not even of the first quality is selling at Rs. 7 *above* the Oomras contract price though ordinarily Khandesh fetches lower price than Berar. These instances show the loss which is caused by watering cotton. In addition it should be pointed out that the East India Cotton Association have penalised watered cotton when such has been tendered against hedge contracts; in some cases 'off' allowances have been fixed, in others the cotton has been rejected entirely.

The up-country merchant or press-owner has done the watering on the assumption that he will have sold his cotton and got his money before the damage is apparent. This was true just at the beginning of the season but it did not continue. So soon as the watering at places like Shegaon was discovered, buyers realizing the risk of deterioration and loss on unsold stocks, became shy and the price for Oomras cottons did not rise to the figure which the excellent crop of the season would have justified. The result was lower quotations for Oomras and *lower prices for Kapas* in the up-country markets. Once the cotton of a tract gets a bad reputation the effect on prices is prompt but the recovery is slow—and the grower suffers. A considerable amount of cotton is sold in Bombay by commission agents and the up-country owners of watered cotton are probably now realizing that malpractices of this type do not pay.

Watering has been most prevalent in the past when the crop has been unusually free from weather-damage and black leaf. In other words, by deliberate adulteration the quality of the best cotton in favourable seasons has been reduced. The excuse is sometimes advanced that it is necessary to wet cotton in order to press it: this is not in accordance with facts. If an ordinary press is kept in even reasonably good order there is no difficulty in pressing dry cotton to the required weight per bale. As has been shown above, the sole object of watering cotton is to secure an unfair gain in weight, which is often temporary, and in doing so permanent damage is done to the cotton, a result which is detrimental alike to the grower, trader and spinner. The Central Cotton Committee desire to bring these facts to general notice in order to prevent further harm being done to the grower by short-sighted practices of this nature.

Bombay, July 7th, 1927.

APPENDIX VIII.

IMPROVEMENT OF PRIMARY COTTON MARKETING.

THE Indian Central Cotton Committee has devoted considerable attention to the improvement both of cotton production and cotton marketing and have approached the latter subject from two aspects. They have promoted legislation, viz., the Cotton Transport Act and the Cotton Ginning and Pressing Factories Act, to discourage abuses and there is abundant evidence that the first of these measures has done much to improve the quality and reputation of the cottons of the tracts to which the Act has been applied; the second Act which is a more recent measure

promises to be equally useful. Further, the Committee have secured the co-operation of the cotton trade in obtaining certain improvements in large-scale marketing. For example 'on allowances,' up to two full grades, may now be claimed when cotton of superior "class" is tendered against a hedge contract and the cottons from certain areas, such as Rajpipla and Ankleshwar where improved types of superior staple are now grown, have been made tenderable against higher standards leading again to 'on allowances.' All such measures lead to better cotton for the consumer and higher prices to the grower but more is needed. It may be taken as axiomatic that improvements in cotton production depend on a better return to the grower and hence an improvement of the conditions under which the grower markets his produce is a primary necessity.

The Indian Central Cotton Committee have recently conducted some investigations into the finance of the cotton grower in certain areas and the results, especially from Khandesh and Berar, have been very striking. The opinion has been widely held in the past that the cotton grower is so involved financially that he is unable to take advantage of market facilities. Whatever may have been the case in the past, the investigations in Khandesh and Berar have shown that this is not the case at present. In 1926, growers in these areas not only were not compelled to rush their *kapas* to market but actually held a considerable portion of their crop unsold until several months after picking. Further, it was found that only in comparatively rare instances were cultivators selling *kapas* to or through the persons from whom they had borrowed money. One general conclusion reached was that while cotton growers require considerable sums for the financing of their agricultural operations, mortgaging and advance sales of the standing crop are now practically unknown in the areas investigated and that what the cotton grower most needs at present is improved market facilities. It is obviously an advantage, both to the grower and the cotton trade, that the cultivator should gain that touch with substantial buyers which sale in an open market, where there is real competition, encourages.

It may be stated that the method of enquiry was to obtain records from every cotton grower in a number of villages which were selected as typical of the tract. In the Khandesh enquiry, records from 813 growers and in the Berar enquiry records from 940 growers were obtained and details as to how each man marketed his cotton and of what prices he obtained were recorded. The local markets were also visited and actual details of 2,908 transactions in Berar and 900 transactions in Khandesh were recorded.

The two tracts, Khandesh and Berar, are similar in many respects, the outstanding difference being that for many years Berar has possessed open cotton markets controlled by Market Committees and governed by rules framed under the Berar Cotton Markets Law. In Khandesh no such regulated markets exist, though there are several unregulated markets such as Dhulia, Amalner, Dondaichi, Sherpur, Nandurbar and Pachora which are used by cotton growers to an appreciable extent.

As far back as 1918 the Indian Cotton Committee strongly recommended the adoption of the Berar system of cotton markets in other parts of India, but doubts

have since been expressed as to whether cultivators themselves use such markets to any appreciable extent. These doubts have been removed by the investigations described above. The village enquiry in Berar showed that 53 per cent. of the cotton growers (in one district 74 per cent.) had taken their *kapas* to the regulated markets and that of the total *kapas* produced (only 87 per cent. of which had been sold at the end of the enquiry) 59 per cent. (or 68 per cent. of the total *kapas* sold) had been sold in this manner. In Khandesh, as one would expect, the lack of regulated markets caused a larger number of village sales, nevertheless 30 per cent. of the cotton growers in the West Khandesh villages took their *kapas* to the larger markets; the percentage in East Khandesh was 8·5 only.

The opinions of individual cultivators in regard to the disposal of their produce were recorded and there was a general unanimity of opinion that better rates and better weighments are obtained in the larger markets. But many Khandesh cotton-growers described certain practices prevalent in the larger markets which discourage cultivators from using them. The principal complaint was that the rate paid was not the rate settled in the market but that, after weighment had commenced, disputes arose and eventually the cultivator was obliged to accept a lower rate than that originally bargained for. In a few instances, rather than submit to such deductions, the cultivators took their *kapas* away but generally this course was impossible. It is, of course, recognized that allowances for quality are necessary and that only really good *kapas* will secure the full rate of the day. But it was definitely established by actual figures obtained from one of the Khandesh markets that double deductions were the practice. The market rate of the day, the actual rate for particular cart-loads settled in the market and the rates finally settled in the ginning factory (after or during weighment) were recorded and it was clearly shown that the *kapas* was allowanced twice. Further proof, if any were needed, that unfair deductions were being made was afforded by the fact that on succeeding days the market brokers combined to prevent the investigators recording the rates settled in the market. A second cause of complaint was that unauthorised deductions of various kinds were made from the weight of *kapas*; it was found that such deductions were a common practice. Complaints of unrecognized allowances, in addition to the recognized market charges, were numerous. Another objection urged was that the rates in the markets are not settled by open bid but by secret signs and that the rates of the day are not properly posted. It was further complained that in those markets where brokers have to be employed such brokers or *arhatyas*, though paid a commission by the seller, in actual practice do not watch the seller's interest but act entirely for the buyer.

In contrast to conditions in Khandesh it will be observed that in Berar a much larger percentage of growers habitually take their *kapas* to the regulated markets. It was further ascertained that current prices were far better known in Berar villages than in Khandesh and the discrepancy between market and village prices smaller, thus showing that even those growers who sell their *kapas* to peripatetic dealers or local shop-keepers benefit by the existence of properly regulated markets. Though the Berar markets are still capable of improvement there is little doubt that they are the best in India at present and that the growers benefit considerably from them.

The Government of Bombay have recently announced the introduction of the Bombay (District) Cotton Markets Bill which will shortly be before the local legislature. The object of this Bill is to enable open cotton markets, somewhat on the lines of the Berar markets but with certain improvements, to be established in places where there is a demand for such facilities. The proposed Act is purely of an enabling nature and contains provisions for ascertaining local opinion before markets are notified. It is proposed that the notified markets will be controlled by Market Committees on which cotton growers will be adequately represented, as this appears to be the only means by which the sellers' interests can be properly safeguarded.

Many of the provisions of the Bill are of a formal nature since the Market Committee will need authority to incur expenditure on the provision of a convenient market yard and for the employment of such staff as may be necessary for the proper control of the market. The main principles of the Bill are the following :—

Firstly, market fees will be applied to the maintenance and improvement of the market and for the benefit of the users of the market. Secondly, rules under the Act (which it will be observed must be laid before the Legislative Council) will make provision for the proper control of brokers and weighmen and for recognized scales of trade allowances ; it is understood to be the intention that such rules will follow broadly the rules at present in force in Berar with such modifications as experience indicates to be desirable or as may be necessary to meet local conditions. Thirdly, the Market Committee will be authorised to make by-laws for the regulation of business and the conditions of trading in the markets which they control, thus providing the necessary elasticity and adaptability to local needs.

The Provisions of the Bill.

The draft Bill will be found in the Appendix ; reference may be made here to the reason for some of the clauses.

Clause 2.—The City of Bombay is specifically excluded because cotton transactions in Bombay are governed by the Bombay Cotton Contracts Act (XIV of 1922) which applies to the City of Bombay only. The proposed Act being of an enabling and permissive character applies to the whole of the Bombay Presidency (including Sind) but it does not follow that it will be applied throughout the Presidency at once—as will be clear from clause 4. It should be added that it is not the intention that this Act should be used to regulate wholesale trading in baled cotton in such towns as, for example, Karachi and Ahmedabad.

Clause 3.—(*i*) As has been explained, the object of the Bill is to promote the improvement of primary cotton markets, where the grower sells his cotton. It is necessary, however, to include ginned cotton in the definition as a limited number of growers in all areas, and an appreciable number in some, actually sell ginned cotton. Cotton waste is included in order that the Market Committee may have power to prevent it being sold in such a manner as to encourage adulteration.

(*iii*) The Divisional Cotton Committee is defined with reference to clause 4. Divisional Cotton Committees appointed by the Local Government have been in existence since 1922 in the following divisions :—

Gujerat, Khandesh, the Southern Division, Sind.

The present constitution of these four Divisional Cotton Committees is as follows :—

Cultivators' representatives	4
Representatives of the Cotton Trade	2
Representative of the Agricultural Department ..	1
Representative of the Co-operative Department ..	1
	8

It will be noted that these Divisional Committees will be formally constituted by rule under the Act and the opportunity undoubtedly will be taken of examining the suitability of their constitution.

Clause 4 (*i*).—An essential feature of the Act is that local opinion has to be consulted before any cotton markets are notified. The conditions of cotton marketing in the Bombay Presidency are diverse and before a market is notified in any area it will be ascertained by full local enquiry that one is needed and that it is likely to work successfully.

Clause 5.—This clause differs from the corresponding section of the Berar Cotton and Grain Markets Law in that it provides for representation of cotton growers on the Market Committee. All members of the Market Committee except two are to be elected by the buyers and sellers ; one member will be elected by the local authority (municipality, local district board or other local body) within whose jurisdiction the market is situated ; and one will be nominated by the Local Government. The representation proposed for growers is slightly greater than that proposed for traders as the latter are in regular attendance at the market while all growers will not be able to attend at the same time.

Clause 6.—The important sub-sections of this clause are (*vii*), (*viii*), (*ix*) and (*x*). By rules framed under these sub-sections the Market Committee will have powers to ensure that trading is carried on under conditions which will be fair to buyer and seller alike.

Clause 7 allows the Market Committee to frame any necessary local by-laws—these require the sanction of the Commissioner in order that they may not be inconsistent with the rules made by Government.

Clause 9.—Subject to the rules made by Government this clause allows Market Committees to employ such persons as may be necessary for the management of the market. In markets of any size a market superintendent will probably be needed and in some markets it may be desirable for weighmen to be servants of the Market Committee and not, as at present, the employees of individual buyers. The provision of unbiassed weighmen is an important matter but the detailed arrangements needed must necessarily vary in different parts of the Presidency.

Clause 13.—This is an important clause. In markets notified under the Act no allowance, whether in weight or in price, which is not sanctioned by a rule or by-law will be permitted.

Clause 16.—This clause is obviously necessary as otherwise a combination of buyers or brokers might set up a rival unregulated market adjoining the notified market and so defeat the intention of the Act. The radius to be served by each market will be fixed, after local opinion has been consulted, in the notification constituting the market. The clause is not intended to give regulated markets any unreasonable monopoly or to force sellers to use them but is a necessary emergency power. There will be no compulsion to deal in the market and the purchase and sale of *kapas* in the villages will in no way be interfered with. The sole intention of the Bill is to give the grower a place where, if he wishes, he *can* sell his cotton under recognised rules.

Bombay, June 21st, 1927.

APPENDIX.

Bill published in "Bombay Government Gazette" dated January 24th, 1927, Part V, p. 4, under Rule 18 of the Bombay Legislative Council Rules.

BILL NO. III OF 1927.

THE BOMBAY COTTON MARKETS BILL.

A Bill to provide for the establishment and the better regulation of Cotton Markets in the Bombay Presidency.

Whereas it is expedient to provide for the establishment of recognized open markets for the purchase and sale of cotton in the Bombay Presidency, excluding the City of Bombay and Aden, and for the better regulation of such markets; And Whereas the previous sanction of the Governor-General required by Section 80-A of the Government of India Act and the previous sanction of the Governor required by Section 80-C of the said Act have been obtained for the passing of this Act: It is hereby enacted as follows:—

Preamble.

9 & 10 Geo. V. C. 101.

Short title.

1. This Act may be called the Bombay Cotton Markets Act, 192 .

Extent.

2. This Act shall apply to the whole of the Presidency of Bombay except the City of Bombay and Aden.

Definitions.

3. In this Act, unless there is anything repugnant in the subject or context:—

'Cotton.'

(*i*) "Cotton" includes ginned cotton, unginned cotton, cotton waste.

'Cotton Market.'

(*ii*) "Cotton market" means a market established under Section 4.

(*iii*) "A Divisional Cotton Committee" shall consist of the members elected by such body or bodies and in such manner as may be prescribed in this behalf, together with such persons as may be nominated by Government to represent the interests of growers of, and dealers in, cotton.

'Divisional Cotton Committee'.

(*iv*) "Prescribed" means prescribed by rules or by-laws made under this Act.

'Prescribed.'

4. (1) The Local Government may, after consulting the Divisional Cotton Committee or upon a representation made by them, by notification in the *Bombay Government Gazette*, declare that any place shall be a cotton market established under this Act.

Notification of a cotton market.

(2) Every such notification shall define the limits of the cotton market so established, and may for the purposes of this Act include within such limits such local area as the Local Government may prescribe.

5. For every cotton market there shall be a market committee. The market committee shall be constituted as prescribed and shall consist of not less than twelve and not more than sixteen members. Of these not less than half shall be persons elected by the cotton growers of such area as the Local Government may prescribe, one shall be a member nominated by the Local Government, one shall be elected by the local authority of the area in which the cotton market is situated, and the remainder shall be elected by the traders in the cotton market in such manner as may be prescribed.

The market committee.

6. (1) The Local Government may, either generally, or specially for any cotton market or group of such cotton markets, make rules consistent with this Act for the purpose of the management and regulation of such cotton markets under this Act.

Rules.

(2) In particular and without prejudice to the generality of the foregoing power, such rules may provide for or regulate—

(*i*) the election and nomination of members of the market committee, the number of members to be elected by each of the bodies referred to in Section 5, and the manner of election and the term of office of such members;

(*ii*) the powers to be exercised by the cotton market committee;

(*iii*) the election of the chairman of such committee and his term of office;

(*iv*) the filling of casual vacancies in the offices of members or in the office of chairman of the market committee;

(*v*) the constitution of the Divisional Cotton Committee;

(*vi*) the management of the cotton market and the prescribing of fees by the market committee, and, subject to the provisions of this Act, the collection and disposal of such fees;

(*vii*) the issue by the market committee of licenses to brokers, weighmen, measurers, surveyors and warehousemen and other persons using the cotton market, the form in which, and the conditions under which, such licenses shall be issued, and the fees to be charged for such licenses;

(*viii*) the place or places at which cotton shall be weighed or measured, and the kind and description of the scales, weights, and measures to be used at such place or places ;

(*ix*) the periodical inspection, verification and correction of all scales, weights and measures in use in the cotton market ;

(*x*) the trade allowances which may be made or received by any person in any transaction in a cotton market ;

(*xi*) the preparation of plans and estimates for works proposed to be constructed partly or wholly at the expense of the market committee, and the grant of sanction to such plans and estimates ;

(*xii*) the form in which the accounts of the market committee shall be kept, the manner in which they shall be audited, and the time or times at which they shall be published ;

(*xiii*) the preparation of an annual budget and its submission for sanction, and the reports and returns which shall be furnished by the market committee;

(*xiv*) the disposal of any surplus funds of the market committee ;

(*xv*) generally for the guidance of the market committee.

(3) Any such rules may, when necessary, provide that any contravention thereof or of any of the conditions of any license issued thereunder shall be punishable with fine which may extend to five hundred rupees.

(4) All rules made under this section shall be subject to previous publication and shall, when made, be laid on the table of the Bombay Legislative Council.

By-laws.

7. Subject to any rules made by the Local Government under the last preceding section and with the previous sanction of the Commissioner, the market committee may, in respect of the cotton market under its management, make by-laws for the regulation of the business and the conditions of trading in such market and may provide that contravention thereof shall be punishable with fine which may extend to fifty rupees.

Sub-committees and joint committees and delegation of powers.

8. The market committee may appoint one or more of its members to be a sub-committee or to be a joint committee for the conduct of any work or works or to report on any matter or matters, and may delegate to any one or more of its members such of its own powers as may be necessary.

Appointments and salaries of servants of the market committee.

9. (1) The market committee may employ such officers and servants as may be necessary for the management of the cotton market and may pay such officers and servants such salaries as the committee thinks fit. The committee may, in the case of any officer or servant of Government which it employs, pay such pension, contribution, gratuity or leave allowance as may be required by the regulations made by Government in this behalf and for the time being in force.

(2) The committee may also, in the case of any of its officers and servants, provide for the payment to them of such leave allowances, pensions or gratuities as it deems proper; and may contribute to any provident fund which may be established for the benefit of such officers and servants.

(3) The powers conferred by this section on the market committee shall be exercised subject to any rules which may be made in this behalf by the Local Government.

Contracts how executed.

10. (1) Every contract entered into by the market committee shall be in writing and shall be signed on behalf of the market committee by the chairman and two other members of the market committee.

(2) No contract other than a contract executed as provided in sub-section (1) shall be binding on a market committee.

The market committee fund.

11. All monies received by a market committee shall be paid into a fund to be called the "Market Committee Fund" and all expenditure made by the market committee under or for the purposes of this Act shall be defrayed out of the said fund: any surplus remaining after such expenditure has been met shall be expended as may be prescribed in the rules made in this behalf.

Purposes for which the market committee fund may be expended.

12. Subject to the provisions of Section 11 all fees collected by the market committee under this Act or the rules made thereunder shall be expended on:—

(*i*) the maintenance and improvement of the cotton market;

(*ii*) the construction and repair of buildings which are necessary for the purposes of such market and for the health, convenience and safety of the persons using it; and

(*iii*) the pay, pensions, leave allowances and pensions or provident fund contributions of the officers and servants employed by the market committee.

No trade allowance not recognized by custom or rules allowable.

13. (1) No trade allowance, other than an allowance prescribed by rules or by-laws made under this Act, shall be made or received by any person in any transaction in a cotton market established under this Act, and no Civil Court shall, in any suit or proceeding arising out of any transaction in any such cotton market, have regard to any trade allowance not so prescribed.

Explanation.—Every deduction other than deductions on account of deviation from sample, when the purchase is made by sample, or of deviation from standard, when the purchase is made by reference to a known standard, or on account of difference between the actual weight of the sacking and the standard weight, or on account of the admixture of foreign matter, shall be regarded as a trade allowance for the purposes of this Act.

Power to borrow.

14. (1) Every market committee may, with the previous sanction of the Local Government, raise the money required for carrying out the purposes of this Act on the security of any property vested in and belonging to the market committee, and of any fees leviable by the market committee under this Act.

(2) The conditions under which such money shall be raised and the time within which the same shall be repayable shall be subject to the previous sanction of the Local Government.

Supersession of market committee.

15. (1) If in the opinion of the Local Government a market committee is not competent to perform, or persistently makes default in the performance of, the duties imposed on it by or under this Act, or exceeds or abuses its powers, the Local Government may, by an order published in the *Bombay Government Gazette*, declare such market committee to be incompetent, or in default, or to have exceeded or abused its powers as the case may be, and may supersede it.

(2) When a market committee has been superseded, all members of the committee shall, as from the date of the order, vacate their offices as members.

(3) When a market committee has been superseded, all property and rights vested in it shall, subject to all charges and liabilities affecting the same, vest in Government.

Provided that if no new market committee is constituted for the cotton market under Section 5, all property that shall remain after the satisfaction of all the debts and liabilities of the superseded market committee shall vest in the local authority of the area in which the cotton market is situated for the purpose of any object of public utility in the aid area.

No private market to be opened in or near places declared to be cotton markets.

16. Wherever the Local Government has, by a notification under Section 4, declared any place to be a cotton market, no person shall, within the area of such cotton market or within a distance thereof to be notified in the *Bombay Government Gazette* in this behalf in each case by the Local Government, except with the sanction in writing of the Local Government expressed over the signature of a Secretary to Government and subject to such conditions as may be imposed in such sanction, set up, establish or continue or allow to be continued any market for the purpose of the purchase and sale of cotton.

Penalties.

17. Whoever in contravention of this Act, sets up, establishes, continues or allows to be continued any market for the purpose of the purchase and sale of cotton, or violates the conditions under which he has been allowed to set up, establish or continue, any such market, shall be punished with fine which may extend to Rs. 500, and, in case of a continuing breach of the provisions of Section 16, with fine which may extend to Rs. 100 for each day after the first during which the breach continues.

Offences to be triable only by First Class Magistrates.

18. No offence under this Act or under any rule made under Section 6 shall be triable by a magistrate other than a magistrate of the First Class.

All fines and damages recovered from an offender shall be paid to the market committee.

Prosecutions under this Act may be instituted by any person duly authorized in writing by the market committee in this behalf.

STATEMENT OF OBJECTS AND REASONS.

The Indian Cotton Committee of 1917-18 drew attention to the necessity of better provision for the marketing of cotton and kapas by growers, and pointed out the advantages of the Berar system of cotton markets as leading to better prices, fairer weighments and the prevention of illegal deductions. They held that the establishment of open cotton markets of this nature would benefit the grower and indirectly the cotton trade generally. The experience gained through the work of the Co-operative Cotton Sale Societies has also shown the great value of an organisation for the sale of graded kapas.

2. The present Bill, which is purely an enabling measure, is based on the recommendations of the Indian Cotton Committee and on the Berar Cotton and Grain Markets Law, 1897. Cotton markets recognised by custom already exist in parts of the Bombay Presidency, but no legal sanction exists for the regulation of such markets other than the market in the city of Bombay. The Bill applies to the whole of the Presidency of Bombay except the city of Bombay and Aden. By clause 4 power is taken to notify any place as a cotton market, the notification defining the limits of such market. Provision has also been made for local opinion being consulted, before a cotton market is so established. On the establishment of a cotton market a market committee is to be constituted including representatives of the cotton growers, of the cotton trade and of the local authority within whose jurisdiction the market is situated. Provision is to be made by rules for the composition of the market committee, the management of the market, and the conduct of the affairs of the cotton market by the committee ; and the market committee is empowered to make by-laws to regulate business and the conditions of trading. Under clause 16 no private market for the purchase and sale of cotton may be opened in or near places declared to be cotton markets. Provision has also been made for disallowing trade allowances other than prescribed trade allowances, and for penalties for violation of the substantive provisions of the Act and of the rules. Clause 15 states when a market committee may be superseded and the consequences of its supersession.

19th January, 1927.

(Sd.) RAGHUNATH PURUSHOTTAM PARANJPYE.

By order of His Excellency the Governor,

N. J. WADIA,

Deputy Secretary to the Government of Bombay,

Legal Department.

BOMBAY, *21st January*, 1927.

APPENDIX IX.

BOMBAY COTTON MARKETS BILL.

BILL No. III OF 1927.

A BILL TO PROVIDE FOR THE ESTABLISHMENT AND THE BETTER REGULATION OF COTTON MARKETS IN THE BOMBAY PRESIDENCY.

(*As passed by the Bombay Legislative Council on the 1st of October* 1927.)

WHEREAS it is expedient to provide for the establishment of recognized open markets for the purchase and sale of cotton in the Bombay Presidency, excluding the City of Bombay, Aden and the town of Karachi, and for the better regulation of such markets; And Whereas the previous sanction of the Governor-General required by Section 80-A of the Government of India Act and the previous sanction of the Governor required by Section 80-C of the said Act have been obtained for the passing of this Act; It is hereby enacted as follows :—

5 & 6 Geo V, c. 61.

Short title.

1. This Act may be called the Bombay Cotton Markets Act, 192 .

Extent.

2. This Act shall apply to the whole of the Presidency of Bombay except the City of Bombay, Aden and the town of Karachi comprising, as from time to time constituted, the municipal district of Karachi, the Port of Karachi and the Cantonments of Karachi and Manora.

Definitions.

3. In this Act, unless there is anything repugnant in the subject or context :—

(*i*) '*Cotton.*'—" Cotton " includes ginned cotton and unginned cotton.

(*ii*) '*Cotton market.*'—" Cotton market " means a market established under Section 4.

*(*iii*) '*Grower of cotton.*'—"A grower of cotton " shall not include a dealer or broker in cotton, although such a person may grow cotton. If a question arises whether any person is a grower of cotton or not for the purpose of this Act, the decision of the Collector of the district in which the person permanently resides shall be final.

(*iv*) '*Prescribed.*'—" Prescribed " means prescribed by rules or by-laws made under this Act.

Notification of a cotton market.

4. *(1) The local Government may, after consulting the District Local Board and such other local authorities as they deem necessary or upon a representation made by the District Local Board, by notification in the *Bombay Government Gazette*, declare that any place shall be a cotton market established under this Act.

(2) Every such notification shall define the limits of the cotton market so established, and may, for the purposes of this Act, include within such limits such local area as the local Government may prescribe.

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*Clause as amended at the second reading; the amendments have been taken from the Official Report of Bombay Legislative Council Debates.

*5. For every cotton market there shall be a market committee. The market committee shall be constituted as prescribed and shall consist of not less than twelve and not more than sixteen members. Of these not less than half shall be persons elected by the growers of cotton of such area as the local Government may prescribe, one shall be a member nominated by the local Government, one shall be elected by the District Local Board of the district in which the cotton market is situated, one by the municipality, if any, of the area in which the market is situated, and the remainder shall be elected by the traders in the cotton market in such manner as may be prescribed.

The market committee.

6. (1) The local Government may, either generally, or specially for any cotton market or group of such cotton markets, make rules consistent with this Act for the purpose of the management and regulation of such cotton markets under this Act.

Rules.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for or regulate :—

(*i*) the election and nomination of members of the market committee, the number of members to be elected by each of the bodies or groups of individuals referred to in Section 5, and the manner of election, the preparation and revision of lists of voters from time to time, the payment of all expenditure in connection with or incidental to such election and the term of office of such members ;

(*ii*) the powers to be exercised by the cotton market committee ;

(*iii*) the election of the chairman of such committee and his term of office ;

(*iv*) the filling of casual vacancies in the offices of members or in the office of chairman of the market committee ;

(*v*) the management of the cotton market and the prescribing of fees by the market committee, and, subject to the provisions of this Act, the collection and disposal of such fees ;

(*vi*) the issue by the market committee of licenses to brokers, weighmen, measurers, surveyors and warehousemen and other persons using the cotton market, the form in which, and the conditions under which, such licenses shall be issued, and the fees to be charged for such licenses ;

(*vii*) the place or places at which cotton shall be weighed or measured, and the kind and description of the scales, weights and measures to be used at such place or places ;

(*viii*) the periodical inspection, verification and correction of all scales, weights and measures in use in the cotton market ;

ix) the trade allowances which may be made or received by any person in any transaction in a cotton market ;

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* Clause as amended at the second reading; the amendments have been taken from the Official Report of Bombay Legislative Council Debates.

(*x*) the preparation of plans and estimates for works proposed to be constructed partly or wholly at the expense of the market committee, and the grant of sanction to such plans and estimates ;

(*xi*) the form in which the accounts of the market committee shall be kept, the manner in which they shall be audited, and the time or times at which they shall be published ;

(*xii*) the preparation of an annual budget and its submission for sanction, and the reports and returns which shall be furnished by the market committee ;

(*xiii*) the disposal of any surplus funds of the market committee ;

(*xiv*) generally for the guidance of the market committee.

(3) Any such rules may, when necessary, provide that any contravention thereof or of any of the conditions of any license issued thereunder shall on conviction by a magistrate be punishable with fine which may extend to five hundred rupees.

*(4) All rules made under this section shall be subject to previous publication and shall, when made, be laid on the table of the Bombay Legislative Council for one month previous to the next session thereof and shall be liable to be rescinded or modified by a motion of the said Council tabled at the next session.

By-laws.

7. Subject to any rules made by the local Government under the last preceding section and with the previous sanction of the Commissioner, the market committee may, in respect of the cotton market under its management, make by-laws for the regulation of the business and the conditions of trading in such market and may provide that contravention thereof shall on conviction by a magistrate be punishable with fine which may extend to fifty rupees.

Sub-committees and joint committees and delegation of powers.

8. The market committee may appoint one or more of its members to be a sub-committee or to be a joint committee for the conduct of any work or works or to report on any matter or matters, and may delegate to any one or more of its members such of its own powers as may be necessary.

Appointments and salaries of servants of the market committee.

9. (1) The market committee may employ such officers and servants as may be necessary for the management of the cotton market and may pay such officers and servants such salaries as the committee thinks fit. The committee may, in the case of any officer or servant of Government which it employs, pay such pension contribution, gratuity or leave allowance as may be required by the regulations made by Government in this behalf and for the time being in force.

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* Clause as amended at the second reading ; the amendments have been taken from the Official Report of Bombay Legislative Council Debates.

(2) The committee may also, in the case of any of its officers and servants, provide for the payment to them of such leave allowances, pensions or gratuities as it deems proper; and may contribute to any provident fund which may be established for the benefit of such officers and servants.

(3) The powers conferred by this section on the market committee shall be exercised subject to any rules which may be made in this behalf by the local Government.

Contracts how executed.

10. (1) Every contract entered into by the market committee shall be in writing and shall be signed on behalf of the market committee by the chairman and two other members of the market committee.

(2) No contract other than a contract executed as provided in sub-section (1) shall be binding on a market committee.

The market committee fund.

*11. All monies received by a market committee shall be paid into a fund to be called the "Market Committee Fund" and all expenditure incurred by the market committee under or for the purposes of this Act shall be defrayed out of the said fund; and any surplus remaining after such expenditure has been met shall be invested as may be prescribed in the rules made in this behalf.

Purposes for which the market committee fund may be expended.

*12. Subject to the provisions of Section 11 the market committee fund shall be expended for the following purposes only :—

(*i*) the maintenance and improvement of the cotton market;

(*ii*) the construction and repair of buildings which are necessary for the purposes of such market and for the health, convenience and safety of the persons using it;

(*iii*) the pay, pensions, leave allowances, gratuities and pensions or provident fund contributions of the officers and servants employed by the market committee; and

(*iv*) the expenses of and incidental to elections.

No trade allowance not recognised by custom or rules allowable.

13. No trade allowance, other than an allowance prescribed by rules or by-laws made under this Act, shall be made or received by any person in any transaction in a cotton market established under this Act, and no Civil Court shall, in any suit or proceeding arising out of any transaction in any such cotton market, have regard to any trade allowance not so prescribed.

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* Clause as amended at the second reading; the amendments have been taken from the Official Report of Bombay Legislative Council Debates.

Explanation.—Every deduction other than deductions on account of deviation from sample, when the purchase is made by sample, or of deviation from standard, when the purchase is made by reference to a known standard, or on account of difference between the actual weight of the sacking and the standard weight, or on account of the admixture of foreign matter, shall be regarded as a trade allowance for the purposes of this Act.

Market committee to be a body corporate.

*14. Every market committee shall be a body corporate by the name of "The Market Committee of....." and shall have perpetual succession and a common seal, and may sue and be sued in its corporate name, and shall be competent to acquire and hold property both moveable and immoveable, to lease, sell or otherwise transfer any moveable or immoveable property which may have become vested in or been acquired by it, and to contract and to do all other things necessary for the purpose of this Act.

Power to borrow.

†15. (1) Every market committee may, with the previous sanction of the local Government, raise the money required for carrying out the purposes of this Act on the security of any property vested in and belonging to the market committee, and of any fees leviable by the market committee under this Act.

(2) The conditions under which such money shall be raised and the time within which the same shall be repayable shall be subject to the previous sanction of the local Government.

Supersession of market committee.

†16. (1) If in the opinion of the local Government a market committee is not competent to perform, or persistently makes default in the performance of, the duties imposed on it by or under this Act, or exceeds or abuses its powers, the local Government may, by an order published in the *Bombay Government Gazette*, declare such market committee to be incompetent, or in default, or to have exceeded or abused its powers, as the case may be, and may supersede it.

(2) When a market committee has been superseded, all members of the committee shall, as from the date of the order, vacate their offices as members.

(3) When a market committee has been superseded, all property and rights vested in it shall, subject to all charges and liabilities affecting the same, vest in Government.

Provided that if no new market committee is constituted for the cotton market under Section 5, all property that shall remain after the satisfaction of all the debts and liabilities of the superseded market committee shall vest in the local authority of the area in which the cotton market is situated for the purpose of any object of public utility in the said area.

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* Clause added at the second reading; the amendments have been taken from the Official Report of Bombay Legislative Council Debates.

† Clause as amended at the second reading; the amendments have been taken from the Official Report of Bombay Legislative Council Debates.

*17. Wherever the local Government has, by a notification under Section 4, declared any place to be a cotton market, no person shall, within the limits of such cotton market or within a distance thereof to be notified in the *Bombay Government Gazette* in this behalf in each case by the local Government, except with the sanction in writing of the local Government expressed over the signature of a Secretary to Government and subject to such conditions as may be imposed in such sanction, set up, establish or continue or allow to be continued any market for the purpose of the purchase and sale of cotton.

No private market to be opened in or near places declared to be cotton markets.

Explanation.—A person shall not be deemed to set up, establish or continue or allow to be continued a place as a market for the purpose of the purchase and sale of cotton if he sells his own cotton outside the premises set apart by the market committee for the purpose of purchase and sale of cotton.

*18. Whoever in contravention of this Act, sets up, establishes, continues or allows to be continued any market for the purpose of the purchase and sale of cotton, or violates the conditions under which he has been allowed to set up, establish or continue, any such market, shall on conviction by a magistrate be punished with fine which may extend to Rs. 500, and, in case of a continuing breach of the provisions of Section 17, with fine which may extend to Rs. 100 for each day after the first during which the breach continues.

Penalties.

*19. No offence under this Act or under any rule made under Section 6 or under any by-law made under Section 7 shall be triable by a magistrate other than a magistrate of the First Class.

Offences to be triable only by a First Class Magistrate.

All fines and damages recovered from an offender shall be paid to the market committee.

Prosecutions under this Act may be instituted by any person duly authorized in writing by the market committee in this behalf.

APPENDIX X.

PROGRESS IN THE INTRODUCTION OF IMPROVED VARIETIES OF COTTON IN VARIOUS PROVINCES.

BOMBAY—(1) *Gujerat.*—The policy of the Agricultural Department to establish 1027 A.L.F. cotton in the whole tract south of the Nerbudda was continued during the year. The Rajpipla and Baroda States have continued distributing improved seed in their territories as usual. One more State of Rewa Kantha, viz., Chhota-Udepur, north of the river Nerbudda, has followed the example of Rajpipla and has been distributing 1027 A.L.F. cotton throughout the State for the past two years. The Agricultural Department supervised 9,103 acres of private seed farms; there was a great demand for improved seed from various quarters and about two million lbs. of seed was distributed chiefly in the tract south of the river Nerbudda.

* Clause as amended at the second reading; the amendments have been taken from the Official Report of Bombay Legislative Council Debates.

For the Broach tract (i.e., the tract between the Nerbudda and Mahi rivers) a pure type of superior staple called "Broach Desi 91" was multiplied on the Broach farm and the resulting seed, sufficient for about 250 acres, was distributed to the members of the Dabhali (Taluka Broach) Co-operative Cotton Sale Society and a few individual cultivators for further multiplication next year.

The Dholleras tract.—The experience of the last four seasons has emphasised the difficulty of rapidly expanding the area under improved types of cotton in this tract owing to the uncertainty of the climatic conditions; the rainfall at times is precarious and at other times too heavy for the establishing of a good stand of the plants. The policy of the Department is to distribute seed of the two improved strains of *Wagad* cotton (Pt. 4 and Pt. 8) around Viramgaon and around Bavla of the Dholka Taluka. The total quantity of seed issued during 1926-27 was 2,347 lbs. covering about 150 acres but in many places the young plants were destroyed by heavy rain and the actual area was only 50 to 60 acres; from this area 10,000 lbs. of seed for distribution in season 1927-28 has been obtained which will be sufficient for 700 to 800 acres. The premium realised by growers amounted to 12 annas per (40-lb.) maund of *kapas* or, say, Rs. 15 per candy.

(2) *Southern Division.*—The cultivation of selected types of Kumpta and Dharwar-American varieties of cotton known respectively as Selected Kumpta (Dharwar No. 1) and Upland (Gadag No. 1) is very rapidly extending, round Hubli and Gadag. The cotton staff of the Agricultural Department and the cotton sale societies of Hubli and Gadag continued to work together for their extension. Selected Kumpta cotton was grown during the year on an area of approximately 300,000 acres (as against 119,532 acres in 1925-26) and Upland cotton on an area of 125,000 acres against 97,400 acres last year. As usual, seed depots were started in various suitable centres and pedigree seed was distributed to the cultivators. In the Bijapur and Bagalkot areas special attempts were made by the Agricultural Department to distribute (selected) Kumpta cotton seed as the sale societies there are still in their infancy. Seed sufficient for 15,000 acres was distributed in these two places but owing to scarcity of rainfall the crop was very poor and the yields low; this was the case with ordinary Kumpta cotton also. The buyers, however, have much appreciated the quality of selected Kumpta cotton in these two markets and have given good premiums during the year. It is hoped, therefore, that the area under this cotton will increase during the next season.

The new cross (Dharwar No. 1 x Rosea) described in the last year's report has proved successful on an area of 150 acres round Bailhongal and Gokak. This is a cotton with good colour, a staple of one inch and a ginning percentage of 33. The produce from the seed distributed was specially collected by the Agricultural Department and sold by auction, the premiums realised being Rs. 25 per naga of *kapas* (1,344 lbs.) The *kapas* was separately ginned and 18,000 lbs. seed stocked for further distribution during the coming season; this will be sufficient for an area of about 2,000 acres.

(3) *Khandesh.*—As last year pure Roseum (N. R.) cotton seed for about 18,000 acres was distributed through Taluka Development Associations, Co-operative Banks and Seed Societies. In addition, a large quantity of N.R. seed was also distributed by cultivators themselves.

The two strains of improved staple, Dhulia 1 (BXX 27) and Dhulia 2 (BXI 9.34), which were referred to in last year's report, were both grown on a large scale on the Jalgaon farm and 60 acres of Dhulia 1 were grown by cultivators. The results being encouraging, about 600 to 700 acres of these strains are being grown by cultivators in 1927-28. Both of these cottons are suitable for spinning 20s and have a reasonably high ginning percentage; they are now undergoing exhaustive yield trials and if these are successful the better type will be introduced into general cultivation.

MADRAS—(1) *Tiruppur-Cambodia area.* (*a*) *Cambodia.*—The work of improvement of Cambodia cotton began in 1918-19. The Agricultural Department enters into yearly contracts with selected ryots by which the latter receive cash advances of Rs. 15 per acre towards the cost of inter-cultivation operations and for which concession they agree to sow the seed supplied by the Department on "seed farms" under Departmental supervision. The *kapas* is ginned co-operatively and the seed is sold to the Department at a premium of Rs. 2 per pothi of 250 lbs. The officers of the Agricultural Department help the seed-farm ryots by supervising cultivation operations, ginning the *kapas*, and marketing the lint which is sold by public auction on behalf of the ryots concerned. The supply of pure seed of a recognised strain obtains for the ryot a higher yield. The supply of capital for cultivation expenses enables the grower to free himself from the clutches of money-lenders who are, in many cases, traders and to dispose of his produce at the highest rates. The joint ginning and marketing enable the cultivator to keep his seed pure and to supply lint of a superior quality in big lots directly to millowners and thereby obtain the highest price for his produce. The lint produced is of the best quality, as is testified by the high prices paid and by the eagerness with which auction sales are attended by the representatives of the *Bombay and other mills.*

316,853 lbs. of seed were purchased from seed-farm ryots in 1926-27 and 311,183 lbs. of this were distributed from depots for sowing 12,447 acres, of which 1,047 acres were sown under seed farm conditions in Tiruppur and Avanashi. The major portion of this area is under strain 295 (Co. 1). Seed farm ryots formed 9 co-operative seed societies, which were financed by the District Urban Bank until the produce was sold. Attempts will be made to start more societies of this kind. The seed farm lint fetched a price of Rs. 15-8-0 per candy on an average over the prevailing market rate. It should be added that 50,000 lbs. of selected Cambodia seed, sufficient to sow 5,000 acres, were distributed this year in the Trichinopoly District by the Department as well as by some of the ryots. In addition to this the extent of the natural spread of the improved strains in Coimbatore and Trichinopoly is large.

(*b*) *Karunganni.*—Karunganni cotton is steadily making headway in the dry lands of Coimbatore District and is displacing dry land Cambodia and Uppam. 95,379 lbs. of pure seed, sufficient to sow about 7,700 acres, were distributed in 1926-27. There were 933 acres under seed farms in nine villages in the talukas of Palladam, Udumalpet, and Coimbatore; these were worked on the same lines as the Cambodia seed farms. The seed-farm royts were given free seed at 12½ lbs.

per acre and an advance of Rs. 10 per acre for cultivation expenses. In most of these farms, the advantages of drilling in rows and intercultivating with bullock power were demonstrated. The lint fetched a price of Rs. 5 per candy over the prevailing market rate.

(2) *Tinnevelly area.*—Company cotton or Karunganni—pure seed (selected Co. type)—is distributed by the Agricultural Department, the Seed Unions, and by ryots who gin co-operatively and sell jointly. Five seed unions were working during the year and sold 111,188 lbs. of seed. The total quantity of pure seed distributed by the above agencies in the districts of Madura, Ramnad and Tinnevelly was 204,909 lbs., sufficient to sow an area of 20,490 acres of pure crop. Good Karunganni has fetched a premium of Rs. 6 to Rs. 10 per candy of lint. The indigenous cotton crop in these districts is a mixture in which Karunganni has now become the predominant variety.

(3) *Northerns and Westerns area*—(*a*) *Northerns tract.*—In the Northerns tract 17,730 acres were sown under " Nandyal 14 " cotton as against 12,700 acres last year. The increase in area is due to the fact that on account of heavy rains last year it gave better yields than local cotton. Nandyal 14 cotton is well suited for red and mixed soils. Till 1924, a premium of not less than Rs. 50 per candy of 500 lbs. of lint over the local market rate was obtained, but this was reduced to Rs. 40 during the next two years and to Rs. 25 in the current year. The low premium and the adverse season this year are likely to reduce the area under this cotton in the next season.

(*b*) *Westerns tract.*—The selection, Hagari 25, was grown on 157,686 acres, mainly in the Bellary District, as against 179,363 acres last year. The reduction in area is due to the preference for food crops. Pure Hagari 25 cotton fetched a premium of Rs. 6 to Rs. 10 per naga of 312 lbs. of lint. The selection, Hagari 62, was grown as an experiment on 1,068 acres in the Bellary Taluka on seed farm conditions. Its average yield per acre and ginning percentage were higher than that of Hagari 25. Spinning tests show that there is no difference between the two types in the quality of lint.

Over 5,000 bales per annum of pure H. 25 cotton lint have been produced in recent years in the tract, but very little pure cotton has been sold as 90 per cent. is mixed with other cottons in varying proportions and sold on types. This system has developed out of trade competition in the past and has been acting as a brake on the improvement of cotton in this tract. H. 25 cotton in its pure state is almost unknown in foreign markets.

United Provinces.—The progress in the introduction of improved varieties of cotton in these provinces continues to make satisfactory progress. The distribution of A. 19 seed is being continued on the lines of previous years and the area is expanding. It has been found that the old type of Aligarh white-flowered cotton does better than A. 19 in certain tracts, and arrangements have been made to meet the demand for seed. In the Central Circle the cultivation of J.N. 1 is continuing but the area is not increasing. Two improved strains of cottons developed by the

Assistant Economic Botanist—Cawnpore 402 and Cawnpore 1031—are being tried on a field scale in controlled areas in Bijnor, Moradabad and Muttra and sufficient quantity of lint will be produced this year to get a definite trade valuation by selling in the open market.

Both cottons have been examined in the Cotton Technological Research Laboratory, Bombay. C. 402 is fit for spinning yarn up to 20—22 counts and has a ginning percentage of 39. It is considered, as far as quality of lint is concerned, one of the best cottons yet produced in the United Provinces. C. 1031 is a short-staple cotton but it has excellent agricultural characters, heavy yield and high ginning percentage make it very popular with growers in unirrigated tracts.

Central Provinces and Berar.—The distribution of Roseum cotton seed produced on a large number of private seed farms was continued on the same lines as in previous years.

Two improved types of cotton known as Verum 262 and Verum 265 have been tested for some years at Akola. These are suitable for spinning 20s to 22s and 22s to 24s counts respectively, are both wilt resistant and have a reasonably high ginning percentage. A tentative distribution of these cottons on a scale of 750 acres has been made during the current season.

Punjab.—The area under Punjab-American cottons has continued to expand, being 1,134,600 acres in the year 1926-27. As stated in the previous year's report, the increase is due to the popularity gained by these varieties on account of the profits they fetch. The principal variety, 4F (which was first given out in 1913), was grown on an area of 1,126,587 acres.

The later selection, 285F (given out in 1921), is not yet popular and was grown on an area of 6,112 acres. The still later selection, 289F, which was recently given out (and which is a heavier cropper than either 4F or 285F), was grown on about the same area in 1926-27 as in the previous year.

Both American and *Desi* cottons suffered considerably from climatic or other factors during the year 1926-27 but the latter less than the former in the canal colonies. Consequently the yield of cleaned cotton is estimated to be 35 per cent. less than that of last year. The damage was due to excessive rains of August and September, jassid attacks in some of the north-east, south-east and central districts, bollworm and dry hot winds in colonies and south-western districts. Farmers have been advised to grow shelter hedges around their fields of American cottons and this device may go a long way in protecting these cottons from adverse climatic effects.

Work on the improvement of indigenous cottons has been continued and the "Mollisoni" variety, which is an improved strain of *G. indicum*, is being grown on a larger scale than before. Similarly in the south-east of the province where on account of lack of irrigation facilities American cotton cannot be grown, a variety of *Desi* (Roseum) cotton is becoming popular. The effect of last year's partial

failure of the crop and of the falling prices of the past two years is reflected in the areas sown in 1927 which were :—

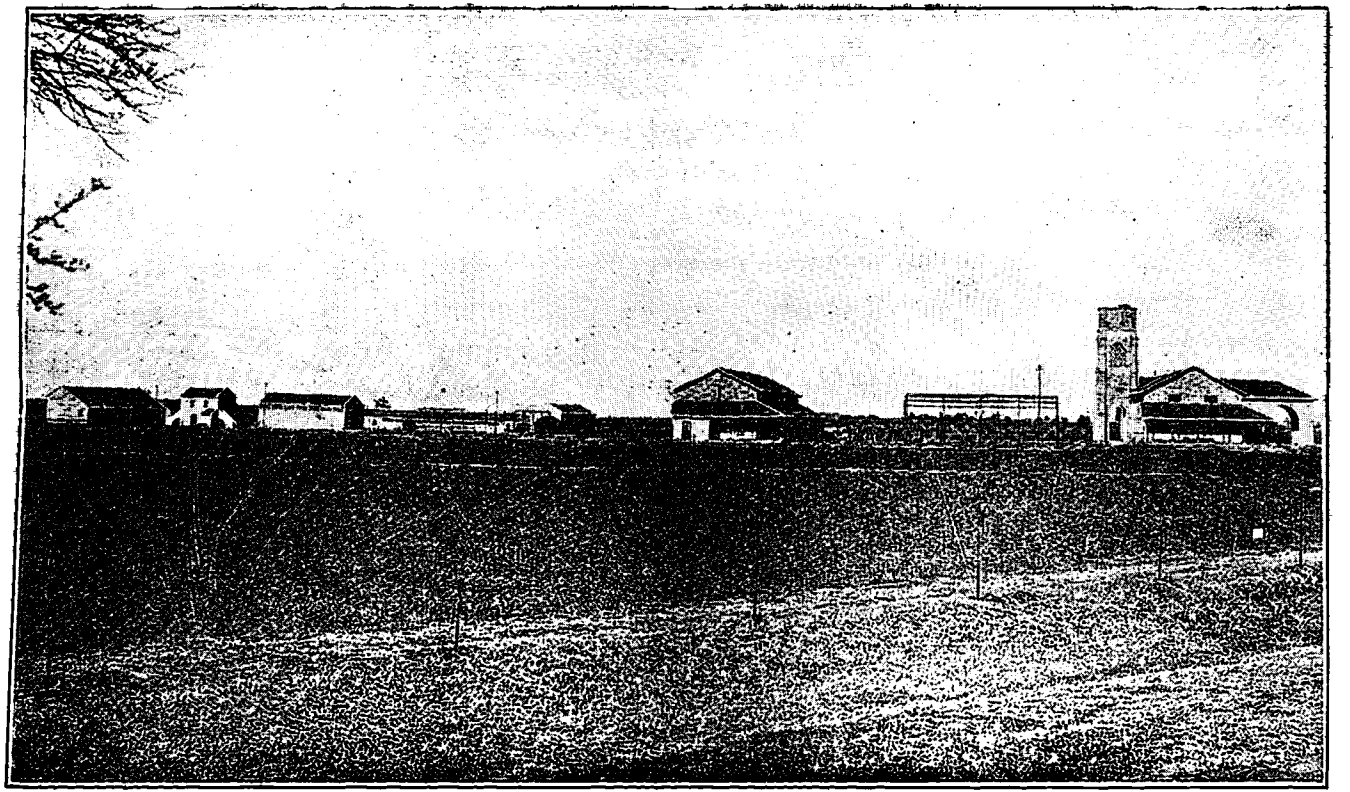
Desi cotton 1,094,100 acres, American cotton 970,100 acres, as compared to 1,385,400 and 1,134,600 acres respectively in 1926-27.

Burma.—The abnormal character of the season caused a serious set-back in the work. In the early part of the rains there was a long period of drought while the late rains were excessive, the total rainfall for the year being 50 inches against an average of 30 inches. The effect of this on the cotton crop of the province may be seen from the fact that only 44,400 bales were exported against 88,258 of last year. Work on the improvement of the varieties proceeded at the Mahlaing and Allanmyo farms. There is, however, no increase to register under improved Wagale and the area under Cambodia is decreasing on account of the fall in price and the insufficient premiums paid. This variety is extremely subject to insect and fungus attack which appears to be the only real obstacle to its spread in certain areas of the province. The difficulties encountered in the spread of the improved indigenous cotton—Wagale —are serious in the case of a season which like the last was largely a failure. The matter is receiving careful attention and the help of the Co-operative Credit Department is being enlisted in an attempt to accelerate progress.

Hyderabad State.—The distribution of seed of the Hyderabad Gaorani (Bani) type was continued in districts Parbhani and Bir, the policy being to maintain this valuable indigenous staple cotton and to exclude inferior varieties so far as possible. At present the major portion of the Nanded District grows *Gaorani* and also the south of the Parbhani District and parts of districts Bidar, Bir and Osmanabad.

Baroda State.—The State has for several years consistently followed the policy of co-operating with the Bombay Department of Agriculture in its attempts to improve the quality of the Surat cottons by introducing the 1027 A.L.F. variety. This policy was continued in such areas of the State as are interlaced with those areas dealt with by the Bombay Department of Agriculture in the Surat and South Surat areas. Attention has now been turned northwards and over 231,000 lbs. of improved cotton seed 1027 A.L.F. was distributed, chiefly in Mangrol Taluka. It is intended to make special efforts to replace as much of the cotton area in Mangrol with improved cotton seed as possible.

Rajpipla State.—The Rajpipla State has continued its policy of maintaining the improved strain 1027 A.L.F. as a pure crop throughout the State. No other variety is now grown in the State and purity is maintained by the annual distribution of selected seed obtained by special arrangement from the Bombay Department of Agriculture, by the Cotton Transport Act and by control of the ginning and pressing factories. As a result Rajpipla cotton is now recognised as equal to the very best type of Surat cotton and is much sought after.



General View of the Institute Buildings and Land.

APPENDIX XI.

INSTITUTE OF PLANT INDUSTRY, INDORE.

Annual Report for the year ended 30th June 1927.

I. Introduction.

In 1922, the Indian Central Cotton Committee resolved that a Central Agricultural Institute for cotton research should be established. The Committee had previously decided to recommend to the Government of India that they should be permitted to contribute from Cotton Cess Funds to a proposed Plant Breeding Institute at Indore which was then under consideration. When the original scheme for this Institute at Indore fell through on account of financial stringency, the Committee approved of a revised scheme for an Institute to be chiefly devoted to cotton investigations. The cost of this scheme was to be met from a capital grant of two lakhs and an annual recurring grant, limited to one lakh, from the Indian Central Cotton Committee and by a combined recurring grant contributed each year by the Durbars of certain Central India States.*

The Institute of Plant Industry, Indore, is the direct outcome of this scheme. Work at the Institute may be said to have started definitely from the 27th October 1924, on which date Mr. A. Howard, M.A., C.I.E., assumed charge as Director of the Institute and Agricultural Adviser to the States of Central India.

This report, therefore, deals with the third year of the existence of the Institute and it may be interesting to note that, within so short a period of time, the erection of the Institute buildings and fittings, the construction of roads and drains, the fencing and laying out of the estate have been completed and considerable progress has been made in the work for which the Institute was founded.

The third meeting of the Board of Governors took place at Indore on January 31st, 1927.

Those members who attended were :—

(1) The Hon'ble Mr. R. I. R. Glancy, C.S.I., C.I.E., I.C.S., Agent to the Governor-General in Central India—(*President*) ;

(2) Dr. D. Clouston, C.I.E., Agricultural Adviser to the Government of India ;

(3) Mr. B. C. Burt, M.B.E., F.C.S., Secretary, Indian Central Cotton Committee, Bombay ;

(4) Mr. C. R. Palairet, Member for Commerce and Industry, Holkar State ;

(5) Mr. C. K. Chhaya, Agricultural Superintendent, Dhar ;

(6) Mr. Amarnath Katju, Revenue Secretary, Jaora ; and

(7) Mr. A. Howard, C.I.E., Director of the Institute of Plant Industry, Indore, and Agricultural Adviser to States in Central India—(*Secretary*).

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* Indore, Datia, Dhar, Dewas (Senior), Rutlam, Jaora, Sitamau and Narsingarh.

Sir Purshotamdas Thakurdas, Kt., C.I.E., M.B.E., M.L.A., was unable to attend on account of the session of the Legislative Assembly at Delhi.

At this meeting, a final report on capital expenditure* amounting in all to Rs. 2,32,133-0-10 was approved and sanctioned. The Director announced that a further capital grant of Rs. 33,333 had been placed at the disposal of the Board of Governors by the Indian Central Cotton Committee for the purpose of completing the roads on the estate and for the erection of fourteen staff quarters for ploughmen, etc.

The Board of Governors accorded sanction to the staff of the Institute and their pay† as finally submitted by the Director.

The Budget for 1927-28‡ was passed and proposals for the utilization of anticipated savings under current expenditure (1926-27) were discussed and approved.

The Board of Governors considered the present system of accounts and audit of the Institute funds under excluded local fund rules. They decided that this system is unsuited to the needs of a Research Institute. The Director was asked to submit formal proposals for submission to the Government of India that the present excluded local fund system be terminated and that the funds of the Institute be placed in the Imperial Bank of India, Indore, and operated upon by cheque. The general control of the funds should vest in the Board of Governors of the Institute and a commercial audit should be carried out twice yearly by a firm of chartered accountants. To implement this change in financial administration, it will be necessary to incorporate the Board of Governors of the Institute. Subject to the approval of the Government of India this will be done by registration of the Institute under the Societies' Registration Act, recently enacted by the Holkar State.

During the year under report two additional States intimated their decision to enter the scheme and to contribute to the funds of the Institute. These States are Tonk (Rajputana) and Bijawar (Bundelkhand).

II. Staff.

Mr. A. Howard, M.A., C.I.E., Director, Institute of Plant Industry, and Mrs. G. L. C. Howard, M.A., Second Imperial Botanist (on deputation) went on long leave from May 5th, 1927. Mr. W. J. Jenkins, M.A., B.Sc., Deputy Secretary, Indian Central Cotton Committee, was appointed to officiate as Director during Mr. Howard's absence.

During the year under report, the following additional appointments were made to the staff of the Institute :—

Dr. R. D. Rege, Ph.D., M.Sc., B.A., Chief Assistant in Agricultural Chemistry. (1st March 1927.)

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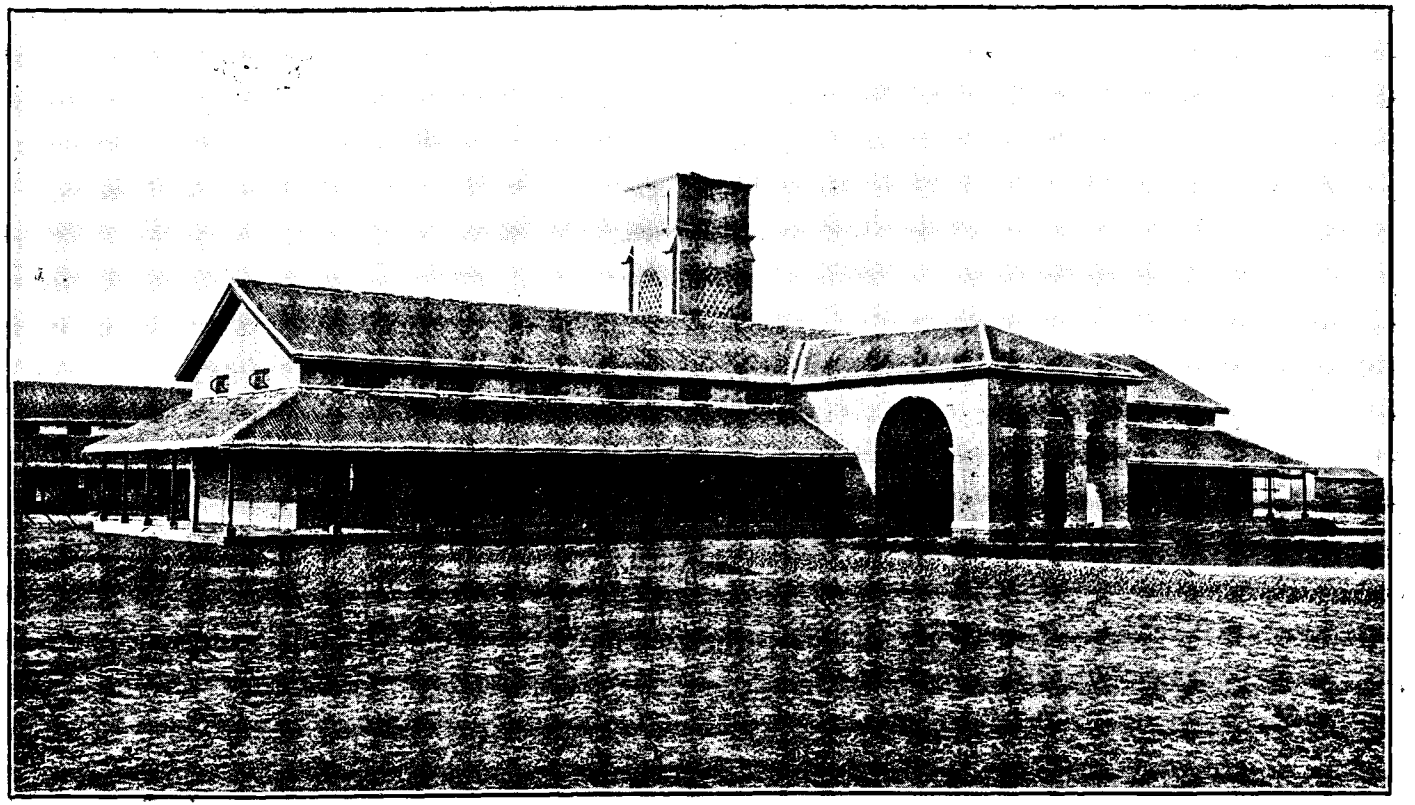
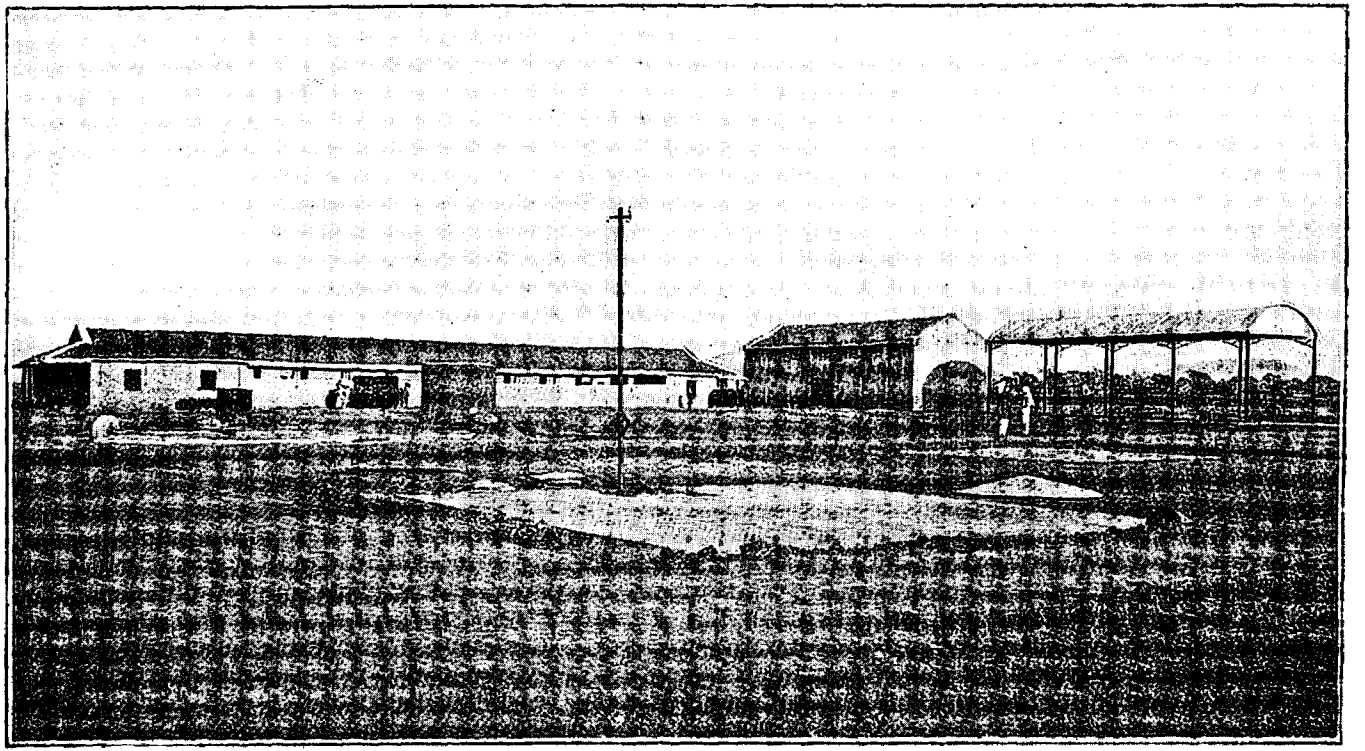
* Appendix A. † Appendix B. ‡ Appendix C.



Main Building, Entrance, Library and Chemical Laboratory.
(*From the West.*)



Farm Yard, Cattle Shed and Fodder Barns.

Mr. Misri Lal Saxena, L.Ag., F.I.C.S., Personal Assistant to the Director. (8th April 1927.)

A complete list of the sanctioned staff of the Institute is given in Appendix B.

Mr. K. R. Joshi, L.Ag., Assistant-in-charge of experiments and seed farm, went on leave from 15th April 1927 to 2nd June 1927, during which period his duties were ably carried out by Mr. B. C. Tambe, B.Ag., Junior Assistant.

Two sanctioned posts of a Senior Assistant for Plant Breeding and an Artist are not being filled at present.

III. Buildings and Land, etc.

(*a*) *Buildings.*

The construction of all the Institute and farm buildings has now been completed. Two blocks of workmen's quarters and two additional chowkidars' houses were built during the year.

The photographs attached to this report will give a general idea of the lay-out of the buildings and of the more important constructions.

A pot-culture house and a retiring room for the Institute staff, with a brick work lattice screen, are being constructed out of savings from current expenditure, 1926-27. These will be completed and in use at an early date. The estimated cost of these additional buildings is Rs. 4,000.

The electrification of the Institute is complete and the various cotton gins have been connected to the motors and are working successfully.

The Institute wells have given an ample supply of water during the year and records are being regularly maintained of the water levels in each of the six wells on the estate.

Certain minor repairs and alterations to the staff and students' quarters in the old Thagi Jail have been carried out in order to make these buildings more habitable during the rainy season.

(*b*) *Land.*

During the year under report, the remaining portion of the Institute area, lying north of the Piplia road, was laid out and the entire estate is now sub-divided into forty-five plots, the sizes of which have been verified and placed on record in a final plan. All the plots have been numbered and delimited by white corner stones which bear the plot numbers.

The road scheme of the Institute has been completed* and the final surface to the metalled roads will be applied during the rains of 1927-28. The estate now possesses 6,300 yards of good metalled roads which immensely facilitate transport and supervision.

* This work, in addition to the construction of fourteen workmen's and chowkidars' quarters, was met from the special Capital Grant of Rs. 33,333 received from the Indian Central Cotton Committee.

The fencing (31,751 feet) of the Institute lands has now been completed.

Several new drains have been dug in situations where experience during last monsoon showed them to be necessary. Many of the existing drains have been widened and deepened and the whole area is now effectively drained and protected against water-logging by a system of surface drains leading into small drainage canals.

A considerable amount of levelling was done during the year and this work, combined with the blocking and filling up of erosion nullahs, has brought additional land into fit condition for cultivation.

Cultivation of the Institute lands was only commenced in the first week of April, 1925. The following figures, which indicate the cropping and utilization of the estate during 1926-27, will testify to the progress made during the last two years :—

(*a*)	Under kharif crops	127.14	acres.
(*b*)	Under rabi crops	52.82	,,
(*c*)	Under irrigated crops	10.07	,,
(*d*)	Cultivated fallow*	64.22	,,
(*e*)	Grass lands	4.75	,,
(*f*)	Under roads, buildings, etc.	40.97	,,
	Total ..	299.97	,,

During the year, much work was done in the construction of irrigation channels. Three plots, amounting in all to 15·28 acres, are laid out for the cultivation of irrigated crops. This area is capable of considerable extension, if required.

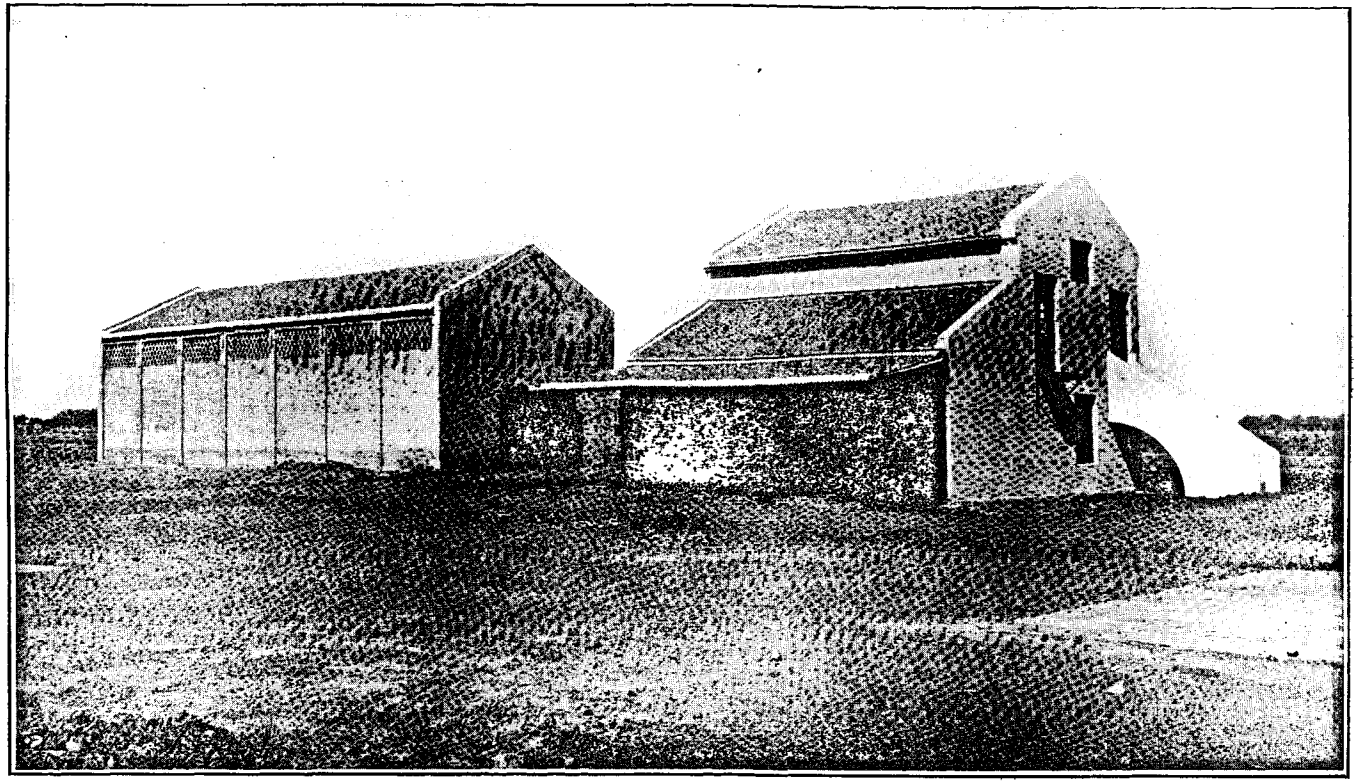
(*c*) *Library and Laboratories.*

The Institute is now equipped with a useful and up-to-date library, containing 1,300 volumes of periodicals, 700 text-books and works of reference, 500 volumes of foreign bulletins and reports and 1,100 scientific publications, reports and bulletins of the Government of India and the various Provincial Governments. 70 periodicals, dealing with agriculture, botany, chemistry, genetics and allied subjects are being received.

Much progress has been made in completing incomplete sets of periodicals, journals, etc., and 382 volumes of such publications have been made up and bound at the Institute. The work of binding all the loose sets of scientific publications in the Library will be completed by the end of June, 1927.

The equipment of the various laboratories at the Institute is now well advanced and is being gradually completed in accordance with the requirements of the various investigations in progress.

* Practically all this land was under special treatment for " kans " eradication.



Cotton Godown and Gin House.

IV. The work of the year.

The rainfall during 1926-27 was five inches below the normal for the tract (33") and its distribution was irregular and uneven. The monsoon broke late and *kharif* sowings could not be commenced until the end of the first week of July. In August, continuous heavy rain caused damage to the crops by water-logging and excessive humidity. Conditions for the rabi crops were also unfavourable owing to insufficient rain in September.

(A) Cotton.

(1) *Plant-breeding Work.*

Collections of unit species of indigenous cottons have been obtained from various Departments of Agriculture in India and these were grown during the year under report and their various field characters were noted. Sufficient numbers of selfed bolls were obtained from each of these cultures to enable all these species to be grown this season for further study. The isolation and study of these unit species will form the basis for the work of classifying the various species and varieties of cotton found on the black soils. The practical bearing of such work is to be looked for in the possibility of isolating useful types for distribution.

Single plant selections from the isolated constituents of the Malwi mixture grown in 1925-26 were studied critically in the field and their lint characters were examined. This work is directed towards obtaining a higher-yielding, earlier and better-stapled cotton for the Central India tract. Further selections were made for cultivation and study in the coming season.

Selections were made from mixed crops of Bani and Roseum cottons and these are being studied with a view to isolate the various constituents of the mixtures.

A commencement has been made during the year under report of growing samples of Herbaceum and Hirsutum cottons, received from different parts of India and from abroad, under both irrigated and dry conditions of cultivation. This will enable these varieties to be studied in detail and the optimum requirements for their cultivation in Central India will be worked out.

Much valuable information was collected with regard to the root development, the relations of the root system to the soil character and the influence of environmental factors on growth of many of the different cottons grown on the plant-breeding plots.

(2) *Farm Cotton Crop.*

Hitherto, the cultivation of the farm lands has been mainly dictated by the necessity of cleaning the fields of deep-rooted weeds, breaking up old boundaries and paths, levelling, and, in general, averaging the plots and fitting them for experimental work and general cropping. Whenever possible, a crop was sown in order to keep the land under cultivation and to get some return during this preparatory period.

During the year 73·18 acres of Malwi cotton were grown at the Institute and an average yield of 4·6 maunds per acre was obtained. This yield is not high owing partly to the adverse season and partly to the land being only recently brought into fit condition for growing a crop. It is, however, considerably larger than that of the previous year before the drainage system of the estate had been laid out.

The farm lint (91.95 maunds) was sold to the local mills for Rs. 2,900 approximately.

Experiments were carried out to determine the effect on cotton yield of increasing the manurial application of Karanj (*Pongamia glabra*) cake from five to ten maunds per acre. Owing to the uneven nature of the newly broken-up fields, the results were inconclusive.

Applications of sann (*Crotalaria juncea*) compost at the rate of ten cart-loads per acre gave very definite increases in the yield of *kapas* as compared with the unmanured plots.

The effect of good surface drainage of the fields on the yield of the cotton crop was most strikingly demonstrated during the year, which, as is mentioned above, was characterized by prolonged heavy rains during the month of August. As a further step to assist surface drainage experimental plots were laid out in which cotton was grown on flat beds of varying widths. The results obtained justify the continuance of this work and it is being repeated, with suitable modifications, during the coming year.

Ratooning of cotton, which is sometimes practised on opium lands, was done over an area of 2·22 acres. This area yielded 13 maunds 8 seers of *kapas*, an increase of one maund over the crop obtained in the first year. The ratoon crop was also a month earlier in maturing.

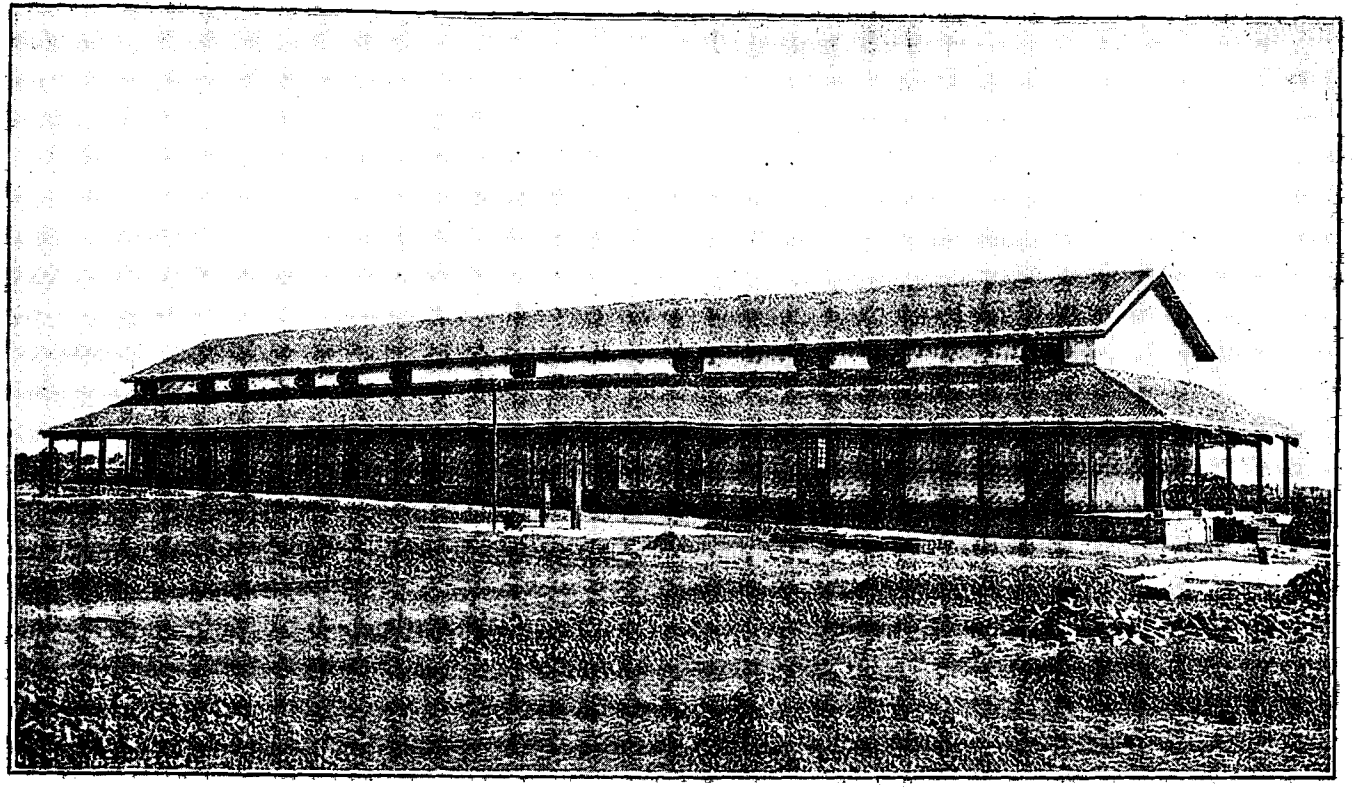
(B) Miscellaneous Work.

(1) *Kans Eradication.*

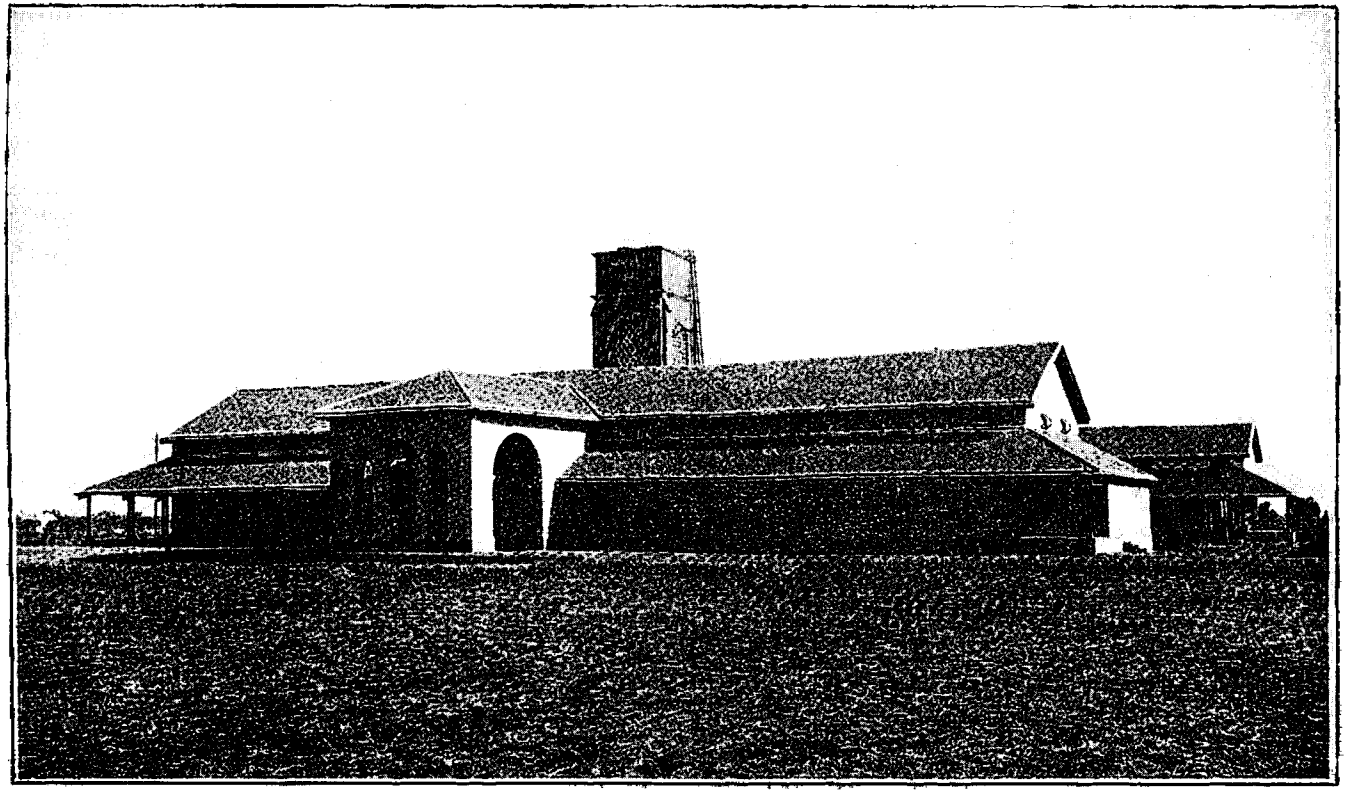
As mentioned in last year's report, most of the farm area, when taken over, was badly infested with " kans " (*Saccharum spontaneum. L.*). By the use of the adjustable bakhar (altered P. & O. 10" Middle Buster Plough) devised at the Institute, an area of 35 acres was cleared of this obstacle to cotton cultivation during the year. The method employed and the bakhar with the four-bullock yoke have been described in leaflets which are available at the Institute.

The " kans " eradicator and the four-bullock yoke were demonstrated at the Bombay Presidency Agricultural Show, Poona, in October 1926, in connection with the Indian Central Cotton Committee's exhibit. These implements aroused much interest and, during the year, 14 complete middle busters, 28 sets of conversion parts, 30 four-bullock yokes and twenty chains with hooks have been supplied from the Institute to different inquirers.

Blue prints, illustrating the dimensions of the four-bullock yoke, which can be manufactured in any village,—are available at the Institute at Re. 1 each.



Director's Office and Laboratories.



Main Building, Entrance and Library
(From the East.)

(2) *Soil Colloids and Cotton Cultivation.*

It was suggested in last year's report that the formation of soil colloids in black cotton soils during the rains was the main factor inhibiting the growth and lowering the yield of the cotton crop. The beneficial effect of small dressings of suitable oil-cakes, in a finely divided condition, was discussed and the arrangements made at Indore to grow karanj plantations to provide a supply of karanj cake for manurial purposes at the Institute were described.

The Chemical Assistant at the Institute has now commenced a series of investigations into the effect of different oil-cake manures on soil colloid formation and is combining field tests with laboratory research with a view to find out the reasons underlying the favourable action of certain oil-cakes on colloid formation in the soil.

(3) *The Preparation of Organic Manure for the Cotton Crop.*

Experiments were carried out with cotton stalks and other waste organic materials to try and evolve a practical method of converting these by-products of cultivation into a suitable manure for the cotton crop. This work is not yet completed but, from the results already obtained, it appears certain that decomposition, which is essential to the preparation of a finely divided organic manure, can only be satisfactorily obtained if the raw materials are firstly broken up into small pieces, passed through the cattle shed as bedding and then stored in pits to which an adequate supply of water is made available. After such treatment, even hard woody fibrous material, such as cotton stalks, decomposes satisfactorily.

It is beyond doubt that the general utilization of cattle and the cattle shed in this way as a " manure factory " for the production of suitable organic manures from waste materials for the cotton crop would lead to a considerable increase in cotton production.

10·30 acres of sann (*Crotalaria juncea*) was grown during the year and utilized for making sann compost. It was found that sann, allowed to *wither* and then composted with urine earth from the cattle sheds, decomposed more completely and in a shorter time than by any other method. It is most essential to aerate the compost heaps thoroughly with wooden ventilators to avoid reduction changes and losses of nitrogen.

(4) *Ensilaging of Jowar Fodder.*

In order to provide additional fodder for the work bullocks, 24 acres of jowar were grown and ensilaged in six pits. The inside of the pits was plastered with *mutti* and cow-dung to make them as airtight as possible. Previous to filling the pits, the jowar was cut into pieces about ½" long by the bullock-gear chaff cutter. The fodder was taken to the chaff cutter immediately after harvesting and the size of the pits (1,300 cubic feet) was arranged so that the chaffing of the jowar and the filling of the pits could be carried on at the rate of one pit per day. It was found advisable to moisten the material in the pits during filling and before closing. The pits were covered with 6" of earth, weighed down with heavy stones, and were finally plastered over and made as airtight as possible. The silage produce was of excellent quality and was a valuable addition to the cattle rations when green food was otherwise unobtainable.

V. Research Students.

One of the most important functions of the Institute is to train research students in different branches of agricultural research, especially in connection with the improvement of cotton.

At the present time, there are seven Research Students (two Senior and five Junior), appointed by the Indian Central Cotton Committee, working at the Institute. The names of these students, the dates of their appointment to scholarships and a brief note on the nature of the investigations on which each of them is engaged, are appended to this report.*

It is gratifying to note that Mr. B. B. Desai, B.Ag., Senior Research Scholar at the Institute, has recently been appointed to the post of Cotton Breeder in Sind under the Government of Bombay. He has resigned his scholarship with effect from 5th June, 1927.

The Indian Central Cotton Committee, at its fourteenth meeting on the 24th—26th January, 1927, decided to award an additional scholarship in cotton agronomy, tenable at the Institute of Plant Industry, Indore. This scholarship has been awarded to Mr. Shamsher Singh, M.Sc., who is expected to join for duty shortly.

In the first Annual Report of the Institute of Plant Industry, Indore, Mr. Howard discussed the question of creating and maintaining an effective contact between the work of the Institute and its subscribers. He laid much stress on the value of periodic visits to the Institute in order to see the work in progress and to overcome the difficulties caused by the limitations of written reports.

During the past year, the Standing Finance Sub-Committee of the Indian Central Cotton Committee held one of its meetings at Indore and the members were conducted round the Institute and shown the work done and in progress. This visit was particularly gratifying and it is hoped that it will lead to a full Meeting of the Committee being held at Indore in the near future.

Arrangements are being made to bring the contributing States in Central India into more personal touch with the work of the Institute by arranging for visits of officials and cultivators. Such visits are always welcome, as a very necessary supplement to the circulation of printed leaflets and reports and will assist considerably in establishing the Institute as a real centre of agricultural improvement in Central India.

(Sd.) W. J. JENKINS,

Officiating Director, Institute of Plant Industry, Indore, and Agricultural Adviser to States in Central India, Indore.

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*Appendix D.

APPENDIX A.

Final Statement of Capital Expenditure (31st January 1927).

HEAD OF CHARGE.

First Group.

		Expenditure. Rs.	a.	p.
(1)	Institute Buildings	1,05,794	9	11
(2)	Furniture and Fittings	33,163	12	7
(3)	Well with engine and pump	10,063	10	3
(4)	Purchase of cattle	6,558	12	3
(5)	Compensation to Indore Durbar	10,078	3	0
(6)	Fencing	14,724	4	0
(7)	Alterations to Staff quarters	3,090	0	0

Second Group.

(1)	Furniture and shelving	3,618	6	10
(2)	Electricity	5,000	0	0
(3)	Motors	1,985	3	0
(4)	Experimental gins and workshop	5,485	6	0
(5)	Cotton gins	2,561	8	0
(6)	Workshop fittings	525	11	2
(7)	Retiring room at Farm	200	0	0
(8)	Scientific Apparatus	11,799	6	3
(9)	Bullock Gear, etc.	1,203	15	7
(10)	Seed bins and drying boxes	660	1	0
(11)	Wire netting and drying houses	3,934	15	0
(12)	Neemuch stone threshing floors	2,126	3	0
(13)	Pucca roads and culverts	8,816	11	0
(14)	Chowkidar's house	742	6	0
	Total ..	2,32,133	0	10

APPENDIX B.

Sanctioned Staff of Institute and their Pays, etc

	Post and Incumbent.	Date of Appointment.	Rate of pay. Rs.
(1)	Assistant in charge of experiments and seed farm. (K. R. Joshi, L.Ag.)	3-2-25	200-25-375
(2)	Personal Assistant. (M. L. Saxena, L.Ag., F.I.C.S.)	8-4-27	200-25-375
(3)	Assistant for Plant Breeding. (Appointment not yet made)		250-25-375
(4)	Chemical Assistant. (Dr. R. D. Rege, Ph.D., M.Sc., B.A.)	1-3-27	300-25-375
(5)	Junior Assistant (Farm). (G. C. Tambe, B.Ag.)	1-7-25	150-10-300
(6)	Junior Assistant (Plant Breeding). (Kuber Singh, B.Ag.)	1-4-25	120-10-300
(7)	Senior Fieldman. (Nihal Singh)	1-12-26	60-5-125
(8)	Junior Fieldman. (V. R. Sathe)	11-12-24	40-5-75
(9)	Junior Fieldman (Cattle and Farmyard). (Yakub Ali)	24-4-26	35-3-50
(10)	Librarian. (B. Hussain Khan)	1-3-26	100-5-150
(11)	Artist. (Appointment not yet made)	..	100-5-150
(12)	Senior Clerk. (Arjun Nath)	1-6-25	120-5-150
(13)	Junior Clerk. (N. P. Vyas)	9-12-24	50-5-75
(14)	First Mistry. (Mohamed Abdul)	14-3-26	60-5-75
(15)	Second Mistry. (Irshad Ali)	1-3-27	30-2-50
(16)	Store-keeper. (O. Trivedi)	1-4-26	50-5-75
(17)	Laboratory-keeper. (Jagganath Prasad)	9-3-26	30-2-50
(18)	Jamadar	..	30-0-0
	3 Peons	..	15 each
(19)	Head Watchman (not yet appointed)	..	20-0-0
	3 Watchmen (Two appointed)	..	15 each
(20)	Farash	..	13-1-15
(21)	Sweeper	..	13-1-14

APPENDIX C.

BUDGET FOR 1927-28.

	A. INCOME.	Rs.	a.	p.
(1)	Grant from Indian Central Coton Committee	1,00,000	0	0
(2)	Contributions from Central India States	20,800	0	0
(3)	Income from land and other miscellaneous receipts ..	6,000	0	0
	Total Receipts ..	1,26,800	0	0

	B. EXPENDITURE.	Rs.	a.	p.
(1)	Director and Agricultural Adviser to States in Central India	29,740	0	0
(2)	House Allowance at Rs. 150 p.m.	1,800	0	0
(3)	Second Imperial Economic Botanist (on deputation) ..	18,040	0	0
(4)	Leave and Pension Contribution at 30% of pay for officers on loan from Government of India	14,150	0	0
(5)	Pay of Staff	21,850	0	0
(6)	Leave and Pension Contribution of Staff	750	0	0
(7)	Provident Fund for Staff at 1/12 pay	720	0	0
(8)	Medical Attendance for Staff and Employees	360	0	0
(9)	Rent of land leased by the Indore Durbar	300	0	0
(10)	Fire Insurance and Protection	2,000	0	0
(11)	Audit Expenses	3,000	0	0
(12)	Plant Breeding and Cultivation	15,000	0	0
(13)	Purchase and upkeep of Machinery	3,000	0	0
(14)	Laboratory Apparatus	3,000	0	0
(15)	Books and Periodicals	3,000	0	0
(16)	Miscellaneous (Postage, Stationery, Furniture, etc.) ..	3,000	0	0
(17)	Travelling Allowances	4,000	0	0
(18)	Publications	1,000	0	0
	Total Expenditure ..	1,24,710	0	0

APPENDIX D.

(A) Senior Research Scholars.

1. Mr. B. B. Desai, B.Ag.* (1-7-26).—Has been working out the life-history of kans (*Saccharum spontaneum. L.,*) a deep-rooted weed which is a great obstacle to cotton cultivation in Central India. Very good progress has been made in this work resulting in the devising of simple and effective methods of eradication.

2. Mr. I. Bannerji, B.Sc., M.Sc. (1-4-26, joined at Indore, 21-3-27).—Has been making a critical study of the chromosome numbers in Indian cottons† and is investigating cytologically the factors which interfere with the successful crossing of American and Indian cottons. The process of fertilisation in cottons is also being studied. He will study the effect of aeration on the setting of seeds in cotton (dry and irrigated). During the coming season, he will make preliminary investigations on boll shedding in cotton under Malwa conditions.

(B) Junior Research Scholars.

1. Mr. H. A. Idnani, B.Ag. (6-6-26).—Has been carrying out investigations on the root development of different varieties of cotton under varied soil conditions in the Malwa tract. Has also assisted in cultural experiments on the cotton crop and has maintained regular records of the water levels in the various wells on the Institute estate. Is abstracting literature on root development.

2. Mr. S. C. Talesera, B.Ag. (14-6-26).—Has worked on the breeding of cotton varieties with the Botanical Assistant and on the examination of botanical characteristics of the different varieties of cotton grown at the Institute. Has made a study of the root development of various types of cotton. In addition, has conducted experiments on different methods of composting and on the utilization of waste materials, e.g., cotton stalks, for manurial purposes.

3. Mr. A. K. Thakur, B.Sc. (1-3-27).—Will work in collaboration with the Director on the completion of the life-history of Kans and will investigate its root development during the rains and the chemical nature of the reserve material in the underground rhizomes and its changes during cultivation.

4. Mr. S. S. Rane, M.Sc. (1-4-27).—Is at present working out the root system of the ordinary date palm (*Phoenix sylvestris*) and obtaining experience in research technique. In addition, during the rains, he will take up the investigation of the connection between root development and "red leaf" in Cambodia cotton.

5. Mr. L. N. Mathur, B.Sc., M.Sc. (1-4-27).—Is working in collaboration with the Botanical Assistant, on cotton cultures (dry and irrigated). Also conducts lint examinations in the laboratory. Is preparing an index (with abstracts) of cotton publications and papers in the Library.

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* Recently appointed Cotton Breeder in Sind under the Government of Bombay.

† This work was commenced at Bangalore in August, 1926, and will be completed at Indore.

Programme of Future Work of the Institute.

The programme of cotton investigations submitted to the Central Cotton Committee in 1923 is given below :—

The aim of the Indore Institute (as regards cotton investigations) is to provide a centre of research for the black soil tracts. At this centre any problems suggested, either by the Central Cotton Committee or by other workers in India can be taken up. A special effort will be made to create a good library dealing with the various aspects of cotton production for the use not only of workers at the Institute itself but also of other investigators on cotton in India.

While the Institute will always be prepared to consider any useful suggestions as regards problems to be investigated, the following preliminary programme is put forward. This falls into four parts.

(*a*) *Botanical Survey.*—Up to the present, little or no attempt has been made in India to isolate, classify and study the unit species which form the frame-work of the various species and varieties of cotton found on the black soils. It is true that the Indian cottons have been classified and surveyed from the point of view of systematic botany, but this is entirely inadequate for modern work as by this method cottons of very different agricultural value are not distinguished. The work needs to be carried much further and nothing short of the isolation and study of the unit species will meet the case. This work has a direct practical bearing. It will, in all probability, lead to the isolation of useful types for distribution. It will also provide material for the plant breeder and for critical work on the physiology and agronomy of cotton.

(*b*) *Plant Breeding.*—Two main practical problems will be taken up at once :—

(1) the creation, establishment and maintenance of an island of long-staple cotton on the Malwa plateau. The types isolated will be available for other areas in India and the crop will enable a grade of improved cotton to be established for the mills and for the shippers ;

(2) the improvement of the fibre of the hardy Roseum type which is, in all other respects, admirably suited for the low-lying areas of Central India.

In the solution of these questions the inheritance of characters will have to be studied. The results will apply not only locally but will also be of general interest.

(*c*) *The Physiology of the Cotton Crop.*—In order to increase production something more than improved varieties is needed. The new varieties must be provided with suitable conditions for growth. To discover these the physiology of the cotton plant must be studied and the factors which now limit production must be determined. This involves the study of root development, the relations of the root system to the soil type and the influence of factors such as soil moisture, soil aeration and drainage, soil texture and soil temperature on growth. Included in these studies is the discovery of factors which produce the shedding of buds, flowers and bolls. During the course of these physiological studies, the general nutrition of the cotton plant will be considered and how far the yield can be improved by manuring and other methods of soil treatment.

(*d*) *The Influence of Environmental Factors on the Lint Characters.*—Modern industries demand a uniform product. Once this is obtained the purchase of raw material as well as the details of manufacture are simplified. In the case of cotton, any tract which can produce uniform lint will rapidly establish its reputation in the trade. It is well known, however, that the cotton fibre alters in character according to the soil on which it grows and to some extent according to the season. Further work is desirable on this matter with the object of discovering what factors bring about these changes, which varieties are most easily affected and whether any practical remedies exist for improving the uniformity of the fibre of the same cotton. This portion of the work is of direct bearing on the question of the maintenance of grades of cotton for the highest class of spinning in this country.

APPENDIX XII.

STATEMENT OF RECEIPTS AND PAYMENTS FOR THE YEAR ENDED MARCH 31ST, 1927.

RECEIPTS.	Rs.	a.	p.
* Opening Balance	24,13,100	14	4
Receipts under Section 12 of the Indian Cotton Cess Act, 1923 ..	6,94,814	4	11
† Other Receipts	16,316	3	11
Interest on Investments	1,22,888	15	9
Total Rs. ..	32,47,120	6	11

EXPENDITURE.	Rs.	a.	p.	Rs.	a.	p.
I. Administration of the Committee ..				1,48,766	15	1
II. Agricultural Research Grants-in-Aid.				3,29,122	3	7
III. Technological Research				1,42,657	4	8
IV. Cash and other Balances (Government Paper at cost)—						
3½% Government Promissory Notes of the Face Value of Rs. 9,49,500.	6,51,209	11	0			
5% Taxable Loan 1935 of the Face Value of Rs. 7,00,000	6,63,556	4	0			
5% Taxable Loan 1929-47 of the Face Value of Rs. 7,88,000 ..	7,65,220	12	10			
‡6% Bombay Municipal Bonds 1954 of the Face Value of Rs. 50,000 ..	56,500	0	0			
Fixed and Call Deposits (with approved Banks)	2,75,000	0	0			
Imperial Bank of India, Limited, Current Account	2,02,726	4	9			
Imprest—Committee's Account (certified by the Secretary) ..	1,502	5	0			
Imprest—Technological Laboratory (certified by the D.T.L.)	500	0	0			
Imprest—Cotton Research Botanist, Punjab (certified by Cotton Research Botanist, Punjab) ..	500	0	0			
Suspense (Recoverable)	9,858	10	0			
§ Total closing balance				26,26,573	15	7
Total Rs. ..				32,47,120	6	11

*Includes Rs. 15,884-3-0 Balance of Provident Fund.

†This amount includes Rs. 14,855-9-10 on account of contribution to the Committee's Provident Fund.

‡Deposited with the Imperial Bank of India, Limited, for security against any Overdraft that may be required by the Committee.

§Includes Rs. 30,739-12-10 of Provident Fund.

We have examined the above statement of Receipts and Expenditure of the Indian Central Cotton Committee with the Books, Vouchers, and certified Returns of the Committee, have obtained all the information and explanations we have required, and certify that to the best of our information and explanations received the above statement is a correct abstract of the figures appearing in the books and is drawn up in conformity with the Rules under the Indian Cotton Cess Act, 1923.

(Sd.) S. B. BILLIMORIA & Co.,
Auditors.

BOMBAY, *30th April*, 1927.

BALANCE SHEET AS ON MARCH 31ST, 1927.

RECEIPTS FROM MARCH 1923.	Rs.	a.	p.
Cotton Cess Receipts	47,55,807	8	3
Interest Account	2,66,558	11	0
Profit on conversion of 6% 1926 Bonds	5,000	0	0
Miscellaneous Receipts	3,283	15	11
Suspense Receipts	22	8	0
Provident Fund Account	30,739	12	10
Total ..	50,61,412	8	0

EXPENDITURE FROM APRIL 1923.	Rs.	a.	p.	Rs.	a.	p.
I. Administration and Improvement of cotton marketing				5,24,831	12	7
II. Technological Research.						
(*a*) Capital Expenditure—						
1. Land and Buildings ..	3,55,299	9	11			
2. Machinery	91,676	11	2			
3. Apparatus and Equipment	41,558	3	7			
(*b*) Working Expenses	3,41,707	0	3			
				8,30,241	8	11
III. Research Studentships				85,947	12	9
Agricultural Research Grants—						
IV. Bombay	2,09,616	8	0			
V. Madras	38,980	0	0			
VI. Punjab Botanical Scheme ..	99,442	15	8			
Punjab Entomological Scheme ..	20,600	0	0			
VII. Central Provinces	86,996	12	6			
VIII. United Provinces	63,814	14	0			
IX. Indore	4,71,343	12	0			
X. Sind	....					
XI. Burma	2,736	8	5			
				9,93,531	6	7
Total Expenditure ..				24,34,552	8	10
Suspense Account				10,144	9	7
Investments and Cash Balances				26,16,715	5	7
Total ..				50,61,412	8	0

APPENDIX XIII.

STATEMENT SHOWING EXPENDITURE UNDER RESEARCH SCHEMES UP TO MARCH 31ST, 1927.

Major Heads.	Total Expenditure up to March 31st, 1927.	Expenditure from Capital grants on (a) Land and Buildings.	Expenditure from Capital grants on (b) Machinery and Apparatus and other movable property.	Expenditure from annual grants on apparatus and equipment of a permanent or semi-permanent nature.	Net working expenses, i.e., staff, field experiments, labour, stores, laboratory and field contingencies including petty apparatus.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
II. Technological Research ..	8,30,241 8 11	3,55,299 9 11	1,33,234 14 9	10,665 2 0	3,31,041 14 3
IV. *Bombay Schemes :—*					
(1) Surat Physiological ..	81,170 0 0	....	....	12,968 14 11	68,201 1 1
(2) Surat Boll-worm	56,608 6 0	....	....	4,226 7 2	52,381 14 10
(3) Dharwar Wilt and Cotton Breeding.	69,450 10 0	....	....	9,374 10 4	60,075 15 8
(4) Khandesh Cotton Breeding.	2,387 8 0	....	....	....	2,387 8 0
V. *Madras Schemes :—*					
(a) Herbaceum Scheme ..	38,980 0 0	....	....	2,639 0 9	36,340 15 3
(b) Pempheres and Physiological Research Scheme.	....	....	....	....	....
VI. *Punjab Schemes :—*					
(1) Botanical Scheme ..	99,442 15 0	22,210 0 0	7,906 0 5	1,908 10 0	67,418 4 7
(2) Entomological Scheme ..	20,600 0 0	....	5,696 11 0	369 6 0	14,533 15 0
VII. Central Provinces	86,996 12 6	....	....	7,432 14 10	79,563 13 8
VIII. United Provinces	63,814 14 0	....	43,679 7 6	1,227 12 3	18,907 10 3
IX. Indore	4,71,343 12 0	*1,89,600 0 0	*30,400 0 0	*23,301 9 11	*2,28,042 2 1
X. Sind	....	....	....	....	....
XI. Burma	2,736 8 5	....	2,736 8 5	....	....
Research Studentships..	85,947 12 9	....	....	....	85,947 12 9
Total ..	19,09,720 11 7	5,67,109 9 11	2,23,653 10 1	74,114 8 2	10,44,842 15 5

*Figures for 1926-27 taken from budget and subject to revision on receipt of final accounts ; returns for 1926-27 not yet received.

Summary.

	Rs. a. p.
Capital Grants (a) Land and Buildings	5,67,635 9 11
(b) Machinery, apparatus and other movable property	2,22,165 9 2
Apparatus and equipments of a permanent or semi-permanent nature purchased from annual grants	72,205 14 2
Total Rs. ...	8,62,007 1 3

APPENDIX XIV.

LIST OF SCIENTIFIC AND TECHNICAL OFFICERS PAID FROM THE INDIAN CENTRAL COTTON COMMITTEE'S RESEARCH GRANTS.

TECHNOLOGICAL RESEARCH LABORATORY.

1.	Director, Technological Research Laboratory, Bombay.	Mr. A. James Turner, M.A. (Cantab.), 1st Class in Tripos and in Part II, B.Sc. (London).	Recently Professor of Textile Physics, Manchester College of Technology.
2.	Spinning Master, Spinning Laboratory, Matunga (Bombay).	Mr. R. P. Richardson, London City and Guilds Full Honours Certificate.	——
3.	Senior Research Assistant (Chemist), Technological Laboratory, Matunga, Bombay.	Mr. D. L. Sen, M.Sc. Tech. (Manch.), M.Sc., A.I.I.Sc., A.I.C.	Recently Research Student at the Indian Institute of Science and Manchester College of Technology.
4.	Junior Research Assistant (Microscopist), Technological Laboratory, Matunga, Bombay.	Mr. H. N. Dutt, B.Sc., M.B.	Recently Demonstrator in Botany, Gujerat College.
5.	Junior Research Assistant (Microscopist), Technological Laboratory, Matunga, Bombay.	Mr. Amarnath Gulati, M.Sc.	—
6.	Junior Research Assistant (Physicist) ..	Mr. N. Hari Rao, M.Sc. (1st Class First), Calcutta University.	Indian Central Cotton Committee's Research Scholar (Textile Physics).
7.	Junior Research Assistant (Physicist) ..	Mr. Ram Saran Koshal, M.Sc.	Indian Central Cotton Committee's Research Scholar (Textile Physics).
8.	Statistical Assistant	Mr. V. Venkataraman, M.A. (Madras), 1st Class Honours in Maths.	Recently Statistical Assistant in Labour Office, Bombay.
9.	Electrician	Mr. K. S. Venkatraman, Government Technical Board Examination, 1921.	Bombay Electric Supply and Tramways Co.
10.	Junior Tester	Mr. S. S. Sukhtankar, Licentiate, V.J.T.I. ..	—
11.	Junior Tester	Mr. K. G. Deo, passed Examination in Arts, Bombay.	—
12.	Junior Tester	Mr. H. B. B. Joshi, B.Sc.	—

LIST OF SCIENTIFIC AND TECHNICAL OFFICERS PAID FROM THE INDIAN CENTRAL COTTON COMMITTEE'S RESEARCH GRANTS—*contd.*

13.	Junior Tester	Mr. K. S. Marar, B.A.	—
14.	Junior Tester	Mr. H. R. Nayak, Inter Science (Madras) ..	—
15.	Junior Tester	Mr. R. G. Panvalkar, B.Sc.	—
16.	Junior Tester	Mr. G. D. Bhide, B.Sc.	—
17.	Junior Tester	Mr. K. V. N. Nayar	—
18.	Junior Tester	Mr. V. N. Modak, B.Sc.	—
19.	Junior Tester	Mr. L. V. Sundararaman, B.A.	—
20.	Junior Tester	Mr. P. S. Sambamurthi	—
21.	Junior Tester	Mr. G. J. Kharkar, B.Sc.	—
22.	Spinning Assistant	Mr. N. Iyengar	—

INSTITUTE OF PLANT INDUSTRY, INDORE.

23.	Director, Institute of Plant Industry, Indore.	Mr. A. Howard, C.I.E., M.A. (Cantab.) ..	Recently Imperial Economic Botanist.
24.	Physiological Botanist	Mrs. G. L. C. Howard, M.A. (Dublin) ..	Recently 2nd Imperial Economic Botanist.
25.	Chief Assistant in Agricultural Chemistry	Dr. R. D. Rege, Ph.D., M.Sc., B.A.	—
26.	Assistant in charge of Field Experiments, Seed Farm.	Mr. K. R. Joshi, L.Ag. (Nagpur)	Lent by Indore State Agricultural Department.
27.	Personal Assistant	Mr. Misri Lal Saksena, L.Ag.	—
28.	Junior Assistant	Mr. G. C. Tambe, B. Ag., (Bombay)	—
29.	Junior Assistant	Mr. Kuber Singh, B.Ag. (Bombay)	

LIST OF SCIENTIFIC AND TECHNICAL OFFICERS PAID FROM THE INDIAN CENTRAL COTTON COMMITTEE'S RESEARCH GRANTS—*contd.*

30.	Senior Fieldman	Mr. Nihal Singh	—
31.	Junior Fieldman	Mr. V. R. Sathe	—
32.	Junior Fieldman	Mr. Yakub Ali	—

Bombay Research Schemes.

(i) *Physiological.*

33.	Botanist in charge of Cotton Research Scheme No. 1—Physiology of the Cotton Plant in Gujerat.	Mr. K. V. Joshi, M.Ag. (Bombay)	On deputation from Bombay Department of Agriculture.
34.	Senior Research Assistant	Mr. S. V. Godbole, M.Sc., B.Ag.	—
35.	Junior Research Assistant	Mr. A. K. Shah, B.Ag. (Bombay)	On deputation from Bombay Department of Agriculture.
36.	Junior Research Assistant	Mr. N. M. Nitimargi, B.Ag. (Bombay) ..	" "
37.	Junior Research Assistant	Mr. R. B. Gode, M.Sc.	—

(ii) *Mycological.*

38.	Cotton Mycologist, Dharwar	Mr. G. S. Kulkarni, M.Ag. (Bombay) ..	Assistant Professor of Mycology, Poona Agricultural College—on deputation.
39.	Senior Assistant to the Cotton Mycologist.	Mr. B. B. Mundkur, M.A. (Madras), 1st Class Honours in Botony and Gold Medallist.	—
40.	Junior Graduate Assistant, Dharwar ..	Mr. R. K. Kulkarni, B.Ag. (Bombay) ..	On deputation from Bombay Department of Agriculture.
41.	Junior Graduate Assistant, Dharwar ..	Mr. T. R. Khadilker B.Ag., (Bombay) (with advanced Botany).	" "

LIST OF SCIENTIFIC AND TECHNICAL OFFICERS PAID FROM THE INDIAN CENTRAL COTTON COMMITTEE'S RESEARCH GRANTS—*contd.*

BOMBAY RESEARCH SCHEMES —*concld.*

(iii) *Entomological.*

42.	Cotton Entomologist, Spotted Boll-worms Investigation.	Mr. Ramrao S. Kasargode, L.Ag. (Bombay).	Assistant Professor of Entomology, Agricultural College, Poona—on deputation.
43.	Research Assistant	Mr. B. P. Deshpande, B.Ag. (Bombay), 1st Class.	On deputation from Bombay Department of Agriculture.
44.	Research Assistant	Mr. S. G. Kadkol, B.Ag. (Bombay.	" — "
45.	Research Assistant	Mr. N. T. Nadkarni, B.Ag. (Bombay) ..	—

(iv) *Khandesh Cotton Breeding Scheme.*

46.	Graduate Assistant	Mr. R. C. Pendse, B.Ag.	On deputation from Bombay Department of Agriculture.
47.	Graduate Assistant	Mr. Y. D. Yardi, B.Ag.	—
48.	Fieldman	Mr. R. A. Rao	—

(v) *Sind Research Scheme.*

49.	Cotton Physiologist, Sakrand, Sind ..	Mr. B. M. Dabral, M.Sc. in Botany, 1st Class (Benares), Malaviya Gold Medallist.	—
50.	Senior Assistant	Mr. Y. D. Wad, M.A., M.Sc. (Bombay) ..	Research Student, Indian Central Cotton Committee.
51.	Junior Assistant	Mr. Rustom M. Ranji, Dip. in Ag. (Bombay)	—
52.	Junior Assistant	— ..	—

LIST OF SCIENTIFIC AND TECHNICAL OFFICERS PAID FROM THE INDIAN CENTRAL COTTON COMMITTEE'S RESEARCH GRANTS—*contd.*

CENTRAL PROVINCES RESEARCH SCHEME.

(i) *Botanical.*

53.	Second Economic Botanist	Mr. D. N. Mahta, B.A., F.L.S.	—
54.	1st Assistant to Economic Botanist for Cotton, Central Provinces.	Mr. S. C. Roy, L.Ag., and Post Graduate, Pusa.	On deputation from Central Provinces Agricultural Department.
55.	2nd Assistant to Economic Botanist for Cotton, Central Provinces.	Mr. D. G. Sawargaonkar, L. Ag. (Hons.) ..	On deputation from Central Provinces Agricultural Department.
56.	3rd Assistant to Economic Botanist for Cotton, Central Provinces.	Mr. D. L. Janoria, L.Ag. (Hons.)	On deputation from Central Provinces Agricultural Department.
57.	4th Assistant to Economic Botanist for Cotton, Central Provinces.	Mr. D. Y. Bhand, L.Ag. (Hons.)	On deputation from Central Provinces Agricultural Department.
58.	5th Assistant to Economic Botanist for Cotton, Central Provinces.	Mr. S. S. Pande, M. Sc.	Research Student, Indian Central Cotton Committee.
59.	6th Assistant to Economic Botanist for Cotton, Central Provinces.	Mr. E. Das Gupta, B.Sc. L.Ag.	—

(ii) *Mycological.*

60.	Senior Mycological Assistant	Mr. Jiwan Singh, M.Sc., 1923.	Research Student, Indian Central Cotton Committee.
61.	Junior Mycological Assistant	Mr. A. N. Paranjape, B.Sc.	—

MADRAS HERBACEUM SCHEME.

62.	Herbaceum Cotton Investigator ..	Mr. R. Chockalingam Pillai, L.Ag.	On deputation from Madras Department of Agriculture.
63.	Technical Assistant	Mr. S. N. Venkataraman, B.A., B.Sc. ..	,, ,,
64.	Technical Assistant	Mr. P. Abraham, B.A. (1st Class)	—

LIST OF SCIENTIFIC AND TECHNICAL OFFICERS PAID FROM THE INDIAN CENTRAL COTTON COMMITTEE'S RESEARCH GRANTS—*concld.*

		MADRAS HERBACEUM SCHEME—*concld.*	
65.	Technical Assistant	Mr. G. Seshadri Ayyangar, M.A.	—
66.	Technical Assistant	Mr. D. Devasirvatham, Govt. Tech. Exam.	On deputation from Madras Department of Agriculture.
67.	Technical Assistant	Mr. S. Gnanapragasam.	,, ,,
		PUNJAB RESEARCH SCHEME.	
		(i) *Botanical.*	
68.	Cotton Research Botanist	Mr. Trevor Trought, M.A. (Cantab.) ..	Recently Senior Botanist to the Ministry of Agriculture, Egypt.
69.	Technical Assistant	Chaudhri Mohd. Akbar, L.Ag.	On deputation from the Punjab Department of Agriculture.
70.	Technical Assistant	Mr. Akbar Ali, B.Sc.	Research Student, Indian Central Cotton Committee.
71.	Technical Assistant	Bh. Sarup Singh, L.Ag.	On deputation from the Punjab Department of Agriculture.
72.	Technical Assistant	Chaudhri Mohd. Rashid	,, ,,
		(ii) *Entomological.*	
73.	Assistant Entomologist	Mr. Sohan Singh Bindra, M.Sc.	Research Student, Indian Central Cotton Committee.
74.	Field Assistant	Mr. Ladha Ram	—
75.	Field Assistant	Mr. Mool Chand	—
76.	Field Assistant	Mr. Mushtaq Ali	—
77.	Statistical Assistant	Mr. Rishi Kesh	—
		UNITED PROVINCES RESEARCH SCHEME.	
78.	Assistant Entomologist, Pink Boll-worm Investigation.	Mr. H. D. Nangpal, B.Sc., Honours School, Punjab.	Research Student, Indian Central Cotton Committee.

APPENDIX XV.

LIST OF RESEARCH STUDENTS.

Year of appointment.	Name.	Where posted on appointment.	Branch of cotton research in which scholarship granted.	How now employed.	Remarks.
1923	Sohan Singh Bindra, M.Sc., Honours School (Punjab).	Lyallpur	Cotton Entomolgy ..	Assistant Entomologist, Lyallpur. Pink Boll-worm Research Scheme.	Indian Central Cotton Committee.
,,	Mohammed Afzal, B.Sc. (Punjab).	Lyallpur	Cotton Botany (Plant Breeding).	Punjab Government Scholar at Imperial College of Tropical Agriculture, Trinidad.	....
,,	Sheo Shanker Pande, M.Sc. (Punjab).	Nagpur	Do. ..	Senior Research Assistant, Central Provinces Botanical Research Scheme.	Indian Central Cotton Committee.
6 ,,	Jiwan Singh, M.Sc. (Punjab) .	Do.	Cotton Mycology ..	Senior Mycological Assistant, Central Provinces Wilt Investigation Scheme.	Indian Central Cotton Committee.
,,	Ilabonto Banerji, M.Sc. (Calcutta).	Coimbatore	Cotton Botany ..	Senior Research Student (Cotton Cytology), Indore Institute of Plant Industry.	Indian Central Cotton Committee.
,,	B. B. Desai, B.Ag. (Bom.) ..	Dharwar	Do. ..	Cotton Breeder, Sind ..	(Bombay Agricultural Service).
1924	Atul Chandra Dutta, M.Sc. (Calcutta).	Coimbatore	Do. ..	(No record.) ..	....
,,	N. Hari Rao, M.Sc. (Calcutta).	Technological Research Laboratory, Matunga, Bombay.	Textile Physics ..	Research Assistant, Technological Research Laboratory, Matunga, Bombay. (Junior Physicist.)	Indian Central Cotton Committee.
4 ,,	H. D. Nangpal, B.Sc., Honours School (Punjab).	Cawnpore	Cotton Entomology.	Assistant Entomologist, Pink Boll-worm investigation, United Provinces.	Indian Central Cotton Committee.
,,	Sant Bahadur Singh, M.Sc. (Benares Hindu University)	Surat	Cotton Physiology. .	Resigned to go to Cambridge for further study. Obtained Ph.D.	....

LIST OF RESEARCH STUDENTS—*contd.*

Year of appointment.	Name.	Where posted on appointment.	Branch of cotton research in which scholarship granted.	How now employed.	Remarks.
1925.	Vishwa Ram Singh, L.Ag. (Agricultural College, Cawnpore).	Cawnpore	Cotton Entomology.	Research Student	Studentship extended.
,,	Akbar Ali, B.Sc. (Punjab) ..	Lyallpur	Cotton Botany (Plant Breeding).	Technical Assistant to Cotton Research Botanist, Punjab.	Indian Central Cotton Committee.
,,	Kidar Nath Trehan, M.Sc. (Punjab).	Do.	Cotton Entomology.	Entomological Assistant, Punjab Subordinate Agricultural Service.	....
8 ,,	S. E. Kumana, B.A., B.Sc. (Bombay).	Technological Laboratory, Matunga, Bombay.	Cotton Technology.	Research Student	Studentship extended.
,,	J. D. Ranadive, B.Ag. (Bombay).	Dharwar	Cotton Physiology..	Do.	Do.
,,	P. K. Roy, M.Sc. (Dacca) ..	Technological Laboratory, Matunga, Bombay.	Textile Physics ..	Resigned in 1925	....
,,	K. R. Sen, M.Sc. (Dacca) ..	Do. ..	Do. ..	Research Student	Studentship extended.
,,	L. N. Rao, M.Sc. (Calcutta) ..	Do. ..	Cotton Microscopy. .	Lecturer in Botany, Central College, Bangalore.	....
1926.	D. F. Kapadia, B.A., B.Sc. (Tech., Manchester).	Do. ..	Cotton Technology .	Research Student	Selected for appointment of Assistant Technologist, Technological Laboratory.
,,	Ram Saran Koshal, M.Sc. (Punjab).	Do. ..	Textile Physics ..	Research Assistant, Technological Laboratory. (Junior Physicist.)	Indian Central Cotton Committee.
7 ,,	M. A. Shama Iyengar, B.Ag. (Bombay).	Surat	Cotton Physiology. .	Research Student	....
,,	Karam Singh Lamba, B.Sc. Honours School (Punjab).	Lyallpur	Cotton Entomology .	Resigned from July 1st, 1927.	....

LIST OF RESEARCH STUDENTS—*concld.*

Year of appointment.	Name.	Where posted on appointment.	Branch of cotton research in which scholarship granted.	How now employed.	Remarks.
1926	Y. D. Wad, M.A., M.Sc. (Bombay).	Coimbatore	Cotton Bio-chemistry.	Research Student	Still under training.
,,	H. A. Idnani, B.Ag. (Bombay).	Institute of Plant Industry, Indore.	Cotton Botany ..	Do.	
,,	S. C. Talesara, B.Ag. (Bombay).	Do. ..	Do. ..	Do.	
1927.	Iyengar, R. Lakshminarasimha, B.Sc. (Mysore).	Technological Laboratory, Matunga.	Cotton Technology .	Research Student	Still under training.
,,	Thakur, Anant Krishna, M.Sc. (Bombay).	Indore	Cotton Bio-chemistry.	Do.	
,,	Dev Raj Mehta, B.Sc. Honours School (Punjab).	Lyallpur	Cotton Entomology.	Do.	
,,	Uma Shankar, M.Sc. (Allahabad).	Cawnpore	Do. ..	Do.	
,,	Rane, Shripad Shamrao, M.Sc. (Benares Hindu University).	Indore	Cotton Physiology. .	Do.	
9 ,,	Varma, Sant Singh, M.Sc. (Benares Hindu University).	Dharwar	Cotton Physiology in connection with Cotton Wilt Investigation.	Do.	
,,	Mathur, Lakshmi Narayan, M.Sc. (Punjab).	Indore	Cotton Breeding ..	Do.	
,,	Kadaba Rangaswamy, M.Sc. (Calcutta).	Coimbatore	Do. ..	Do.	
,,	S. Shamsher Singh, M.Sc. (Punjab).	Indore	Cotton Agronomy . .	Do.	
34 Total.					

" Indian Central Cotton Committee " in the Remarks column indicates a post paid for from one of the Committee's Research Grants.

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